

In This Issue—A. E. A. Summer Convention

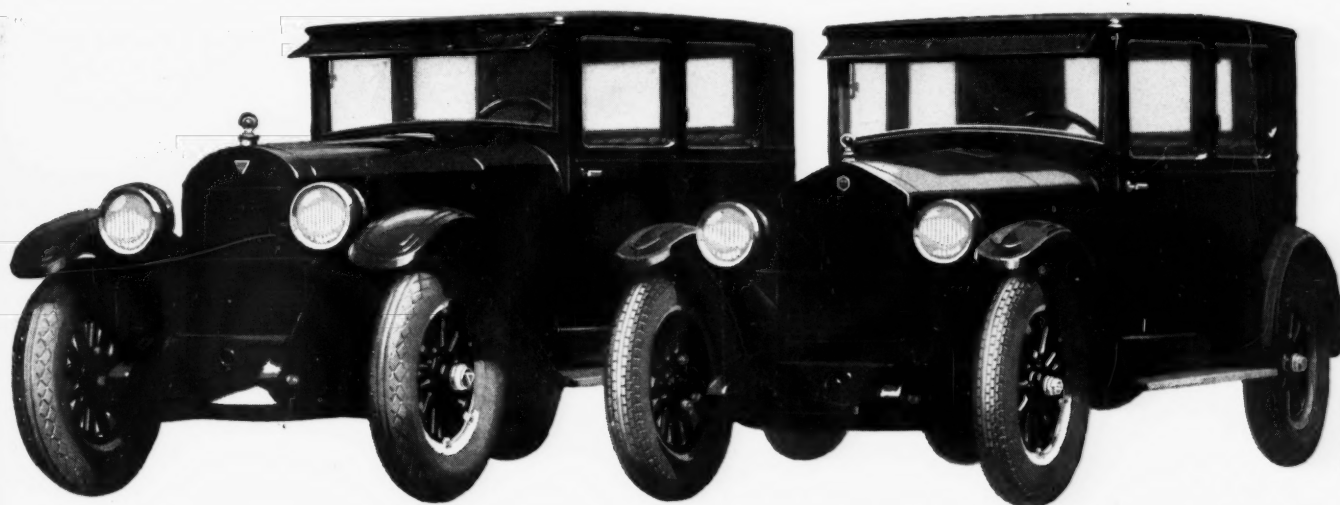
MOTOR AGE

Vol. XLVIII
Number 1

PUBLISHED WEEKLY AT 5 SOUTH WABASH AVENUE
CHICAGO, JULY 2, 1925

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Three Dollars a Year

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At the New Low Prices, More Than Ever the Greatest Dealer Opportunity

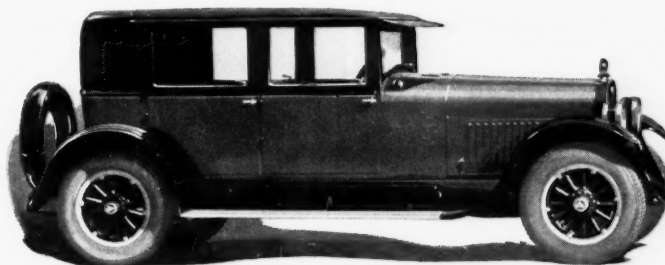
At the old prices, Hudson-Essex were everywhere acknowledged the greatest of all automobile values. Now the world's largest production of 6-cylinder cars makes possible these price reductions. More than ever Hudson-Essex represents the most profitable and satis-

factory line to sell, as well as the "World's Greatest Buy."

The Brougham, an entirely new Hudson type of custom quality, with the Hudson Sedan, offers as sensational value among luxurious cars as the Coach in the utility field.

A New and Beautiful Hudson

All - aluminum body construction. Genuine leather rear quarters. Finest fittings and upholstery.



The Brougham
\$1595

Freight and Tax Extra

HUDSON MOTOR CAR COMPANY, DETROIT, MICHIGAN

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EASY!



Clamp Jaws
to Rim as
Shown and

\$6.00

Retail price
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sippi. Slightly
higher else-
where. Attractive
discounts to
the trade.
Ask your job-
ber.



**A PULL
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DOES THE TRICK**

Set-screws in jaws grip the rim firmly. ONE MOVEMENT contracts the rim and holds it in position until ready to be replaced. Long, powerful leverage by means of extension socket handle. Half the rim is forced downward, then forward, making clean separation without jamming or burr, in the edges.

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Also makers of Chrome Vanadium Wrenches, Carbon Steel Drop Forged Wrenches, Vises, Pliers and Drop Forgings.

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U. S. PAT. PEND. CANADA PAT. 1924.

DEALERS:

At last a practical and compact rim tool for car owners. Write for our attractive resale proposition.

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What sells cars with the least resistance? You know it's quality, distinction and an attractive price.

What is the only thing that makes these sales worth while to you? The kind of a contract that recognizes your right to a net profit on every sale.

The Moon product and the Moon contract contain all these elements of a successful, permanent and profitable business.

Moon does not force cars on the dealer. You buy what you need only when you need it. Moon recognizes the existence of a used car market. You do not have to pile up the iron in the rear to force the sale of a surplus of new cars in the front.

Here's another thing for you to remember. *As long as there is an automobile business there will be Moon cars and successful Moon dealers.*

Moon has produced \$179,000,000

worth of motor cars. It is part of a \$75,000,000 group of America's greatest specialists. Their unlimited engineering and manufacturing facilities are allied with Moon to insure the greatest value that can be built into a motor car.

Another unit of this powerful combination is the new Diana Straight "8" which is also sold by Moon dealers.

It gives you the most complete line of quality sixes and eights—at sales-compelling prices—that any dealer can acquire.

Finally the Moon finance plan enables you to buy your cars on terms that do not tie up a lot of your capital. It is a contract your banker will approve because he knows instinctively that it is a good business risk.

Moon has a message that you will be glad to know even if it only serves to show you the difference between the conventional dealer franchise and the one that Moon offers.

Better write us and find out about it.

Touring Car .. \$1295
Roadster \$1395

Standard 4-door Sedan . \$1595
Cabriolet Roadster \$1695

2-door DeLuxe Sedan . \$1695
4-door DeLuxe Sedan . \$1785

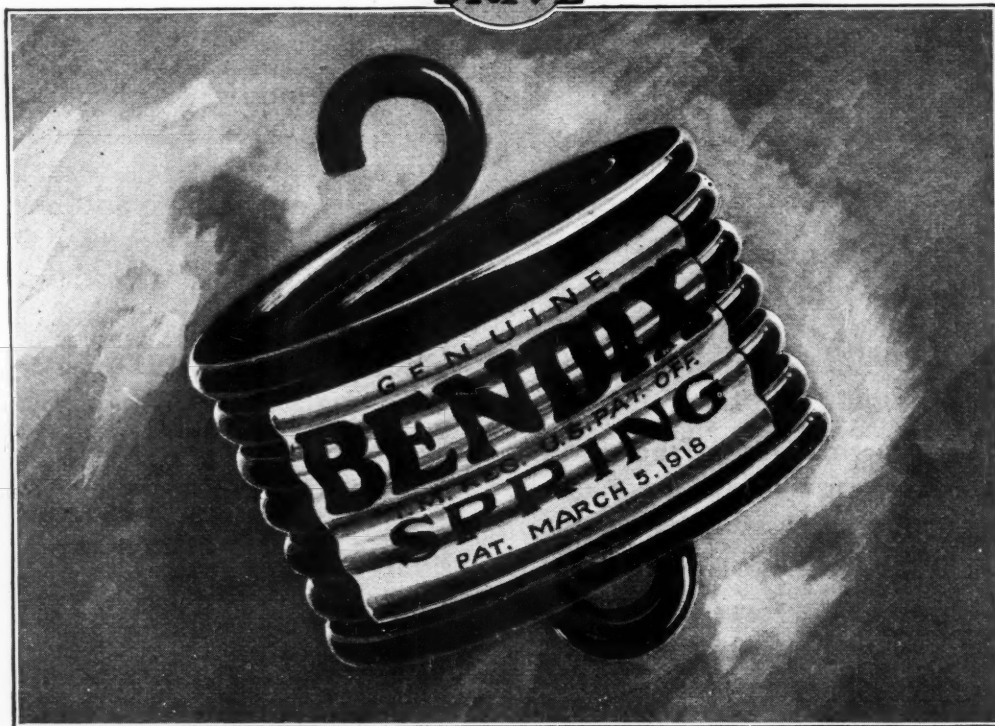
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MOTOR AGE

Reg. U. S. Pat. Office

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 Entered as Second Class Matter Sept. 19, 1899, at the Post Office at
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TRADE NEWS For the Trade

WHEN a new automobile comes on the market the trade wants information about it that it is unable to obtain from the daily press accounts and advertisements. What the trade wants is an analytical description of the product. The way in which MOTOR AGE specializes in furnishing such information was well illustrated by the detailed study of the New Diana Eight which appeared in last week's issue. The article was based upon on-the-spot observation and trial by one of our technical staff, with the result that an accurate and authentic story could be written.

That is the MOTOR AGE plan in handling articles of this kind. We can do this because of our large fact gathering facilities and technical talent.

An article in this week's issue dealing with the changes being made in the Rickenbacker is another illustration in point. Thru co-operation of the factory one of our technical representatives has been able to prepare a clear and concise article covering this new development in a way that will be appreciated by our readers.

News of this kind, handled in this way, has a very direct dollars and cents value to the men who read this paper. That is why we spend money to provide it.



The Car Manufacturer
should be vitally interested in the
profits the car dealer makes.

In my plans for the expansion of
the Stutz business, I have not over-
looked this great essential.

To those who are seeking a con-
nection which will guarantee them
the maximum of protection and
cooperation, I have a message of
real interest to deliver.

FREDRICK E. MOSKOVICS
President
STUTZ MOTOR CAR COMPANY
OF AMERICA, Inc.
Indianapolis, Indiana.



This symbol means that Studebaker prices do not
include the profit of outside body-makers

NO yearly models—with these three words Studebaker banished once and for all, one of the greatest hazards of retail automobile merchandising. Studebaker dealers now enjoy the sales advantage of selling cars that are *always new*.

THE STUDEBAKER CORPORATION
OF AMERICA
SOUTH BEND, INDIANA

T H I S I S A S T U D E B A K E R Y E A R

Nash Leads the World in Motor Car Value



*A New Sales Record
Each Month for
9 Consecutive Months*

The Special Six and Advanced Six models are establishing a unique record.

For nine consecutive months the best previous similar monthly sales record in the history of The Nash Motors Company has been far surpassed.

In two definite ways this situation is adding greatly to the profits of Nash dealers: *first*, naturally, greater sales with no increase in overhead *add substantially to profits*; *second*, the demand is so great that Nash dealers can "*pick*" their deals and thus make a *bigger net* per car. (1950)



Install a Complete New Set of Valves For Greater Profit

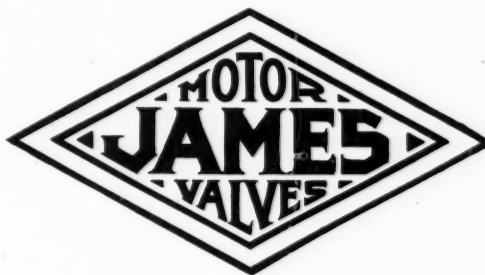
A complete new set of James Motor Valves is absolute guarantee of securing maximum speed and power from any engine suffering from faulty valve operation.

Garage and repair men everywhere are giving up the old-time method of regrinding old valves. Their experience demonstrates that a new set of James Motor Valves not only guarantees greater satisfaction to the car owner, but enables them to do a quicker, easier, and more profitable job.

- The James line provides a correctly designed valve—built to exact car-manufacturer's specifications—for 96% of all the cars and trucks on the road.

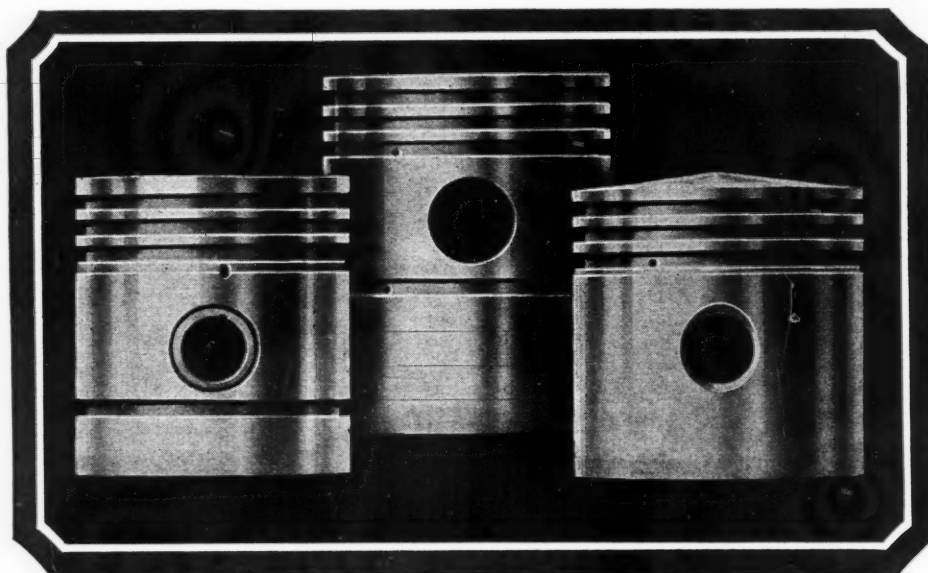
The huge demand for James Motor Valves for replacement has brought about the establishing of jobbers and dealers in every section of the country. You should have no difficulty in securing immediate delivery on your valve requirements.

If your dealer does not carry James Motor Valves, write us and we will see that your needs are promptly filled.



JAMES MOTOR VALVE COMPANY
1350 Maple Street
Detroit, Michigan

McQuay-Norris Pistons have greater precision and accuracy



Remember

The best profits are in the best parts. Poor replacement parts can ruin a good mechanical job.

McQuay-Norris offers the replacement trade definite superiorities in both Factory Duplicate and Wainwright design pistons. Their pin alignment is accurate with the gliding surface of the piston and the ring grooves.

Their grooves are cut and finished in separate operations. Result—greater accuracy and precision.

Four operations are used to finish and align the pin holes instead of two. Result—greater accuracy and precision.

They are all equipped to be machined between centers—the most modern practice.

They are boxed in sets, for the replacement trade.

Greater accuracy and precision is an advantage to be found in the whole McQuay-Norris line—piston rings, pistons, pins and bearings.

McQUAY-NORRIS PISTONS

The Complete McQUAY-NORRIS parts line
PISTON RINGS-PISTONS-PINS-BEARINGS

McQUAY-NORRIS MANUFACTURING COMPANY. *General Offices:* ST. LOUIS, U. S. A.
Factories: St. Louis, Indianapolis, Connersville, Ind.; Toronto, Canada

MOTOR AGE

Vol. XLVIII

Chicago, July 2, 1925

No. 1

Summary and Index of Important Events in **This Week's Automotive News**

Detailed Stories from MOTOR AGE Staff Writers and Special Correspondents Appear in News Section Beginning on Page 32

OUTLOOK for July business in automotive industry considered very favorable. Seasonal decline in June less than in former years. Page 32.

President John Hertz of Yellow Cab refuses to deny or confirm reports of merger pending with General Motors. Page 32.

Noise elimination is one of principal subjects discussed at summer convention of Society of Automotive Engineers. Page 43.

Chrysler Corporation buys all business and property holdings of Maxwell. Page 33.

Deliveries of new Diana Eight are heavy in Chicago trade territory. Page 34.

Automotive parts and accessory trade moves steadily throughout June while prospects for July continue to be good. Page 34.

Decision of N. A. C. C. directors to arrange co-operative insurance company ends long controversy over rates. Page 42.

Fiat Company opens active sales campaign in favor of its new light model. Page 39.

Western Aero League is formed in Los Angeles to push development of aviation and building of landing fields. Page 39.

Automotive payroll increases 56 per cent during the first five months of the year, figures show. Page 38.

June sets record for Hudson-Essex sales, the number exceeding May by about 2,500. Page 33.

June sales in Chicago show advance with open models improving slightly in demand. Page 37.

Chrysler will sell cars "equipped" with insurance for one year as part of the purchase price. New finance methods also planned. Page 37.

Renault stock model breaks world's record for 24 hours over the Montlhery track in Paris. Page 36.

New Orleans June sales better than May with the rush expected by dealers during August. Page 36.

Department of Commerce reports May output of motor cars exceeds that of last year but is below figure for April. Page 33.

Sensational pace of sales in Detroit during April continues throughout May. Page 36.

Cannon Ball Baker, Rickenbacker's chief test pilot, claims many long distance records as result of his novel job. Page 38.

Passenger automobiles moving more steadily with slow gains reported in Oregon. Page 35.

Vice-president Rice of General Motors is made chairman of U. S. Delegation to Pan-American Roads Congress. Page 43.

Southern California reports the most encouraging sales situation that has existed in many months. Page 35.

June sales in Boston display much steadier tendency than in May. Page 34.

In Next Week's Issue—Another Bill Fixit Experience

Merchandising Problems to Front at Summer Meeting of A. E. A.

Harvard Bureau's Cost Survey, Webster's Reconsideration of Resignation and Steps Toward Possible Merger With Other Organizations Are Outstanding Features

BY SAM SHELTON

Colorado Springs, June 26.

MANUFACTURERS and wholesalers of automotive accessories and equipment met here this week in the tenth anniversary summer convention of the Automotive Equipment Association for consideration of those merchandising problems which more and more are being recognized as extending all the way down through the retail dealer to the ultimate consumer.

Members of the A. E. A. and their guests were present from all sections of the United States and Canada. New England, the southern states, the central west, the Rocky Mountain region and the Pacific coast territory were well represented and there was an unusually large representation from the Association's Canadian membership. Probably the fact that the Association's summer meeting is going to Toronto next year accounts somewhat for the enthusiasm of the members from the Dominion. In all about 130 jobber members and 155 manufacturer members were represented at the convention, but the fact that most members were represented by a delegate and an alternate and that many of these representatives were accompanied by members of the families brought the convention personnel to the neighborhood of 1,000.

Outstanding among the accomplishments of the convention were these:

Report of the second survey of the cost of doing business in the wholesale automotive equipment field by the Bureau of Business Research of Harvard University.

Definite suggestions by Dr. Melvin T. Copeland, director of the Bureau of Business Research, of better methods of retailing automotive equipment and supplies as a means of increasing the profit of both wholesalers and retailers.

Authorization for the board of directors to proceed with negotiations for the consolidation of the Automotive Equipment Association with other associations in the same field.

Announcement that Commissioner William M. Webster, chief executive officer of the association since it was established 10 years ago, had reconsidered his resignation and would remain as commissioner.

Divisional meetings of both manufacturers and jobbers at which representatives of the other group talked frankly of the faults and shortcomings their own group found in the other. Thus at the manufacturers' meeting several jobbers expressed friendly criticism of the manufacturers and at the jobbers'

A. E. A. Board of Directors



1—E. E. Klewer, secretary; 2—W. A. White, Orr Iron Co., Evansville, Ind.; 3—H. L. Stevenson, Motor Supply Co., Phoenix; 4—Percy Stern, Interstate Electric Co., New Orleans; 5—Jesse F. Brown, S & M Lamp Co., Los Angeles; 6—Wallace Page, American Motor Equipment Co., Boston; 7—Lou Safford, McQuay-Norris Mfg. Co., St. Louis; 8—N. F. Ozburn, Ozburn-Abston Co., Memphis; 9—A. C. Storz, Storz-Western Auto Supply Co., Omaha; 10—M. S. Gooderham, Toronto Auto Accessories, Ltd., Toronto; 11—L. F. Iverson, The Piston Ring Co., Muskegon, Mich.; 12—William M. Webster, commissioner; 13—J. A. Blum, T. T. Hutchinson Co., Wheeling, W. Va.; 14—F. B. Caswell, Champion Spark Plug Co., Toledo; 15—Ralph J. Cahall, Cahall Motor Supply Co., Philadelphia; 16—William T. Morris, president, American Chain Co., Bridgeport, Conn.; 17—B. K. Sweeney, B. K. Sweeney Electric Co., Denver; 18—P. D. Parker, Edison Lamp Works, Harrison, N. J.

Membership Committee



Left to right: B. W. Ruark, secretary; W. R. Crow, Crow-Burlingame Co., Little Rock, Ark.; H. J. Banta, The Banta Co., Los Angeles; D. G. Smith, Smith & Hemenway, Inc., Irvington, N. J.; William M. Webster, commissioner; George E. Ellis, Supplee-Biddle Hardware Co., Philadelphia; J. A. Bennet, Bennet & Elliot, Ltd., Toronto; F. W. Pardee, American Auto Parts Co., Detroit; F. P. Lilley, Quinn & McGill Motor Supply Co., Denver.

meeting some broad-visioned manufacturers pointed out some faults they believed attributable to the jobbers.

The second Harvard survey which was presented to the members in pamphlet form and discussed at considerable length by Dr. Copeland in an address, was based on reports received from 151 jobber members of the A. E. A. This compared with only 128 members reporting in the survey made last year. Dr. Copeland's address, reported more fully elsewhere, pointed out the significant features of this comparison, the most noticeable of which was an increase in the sales force expense from 7.8 per cent of total sales in 1923 to 8.2 per cent in 1924. The common figure for total expense of doing business in 1924 was found to be 25.5 per cent of sales as compared with 23.4 in 1923. At the same time the common figure for gross margin of profit was reduced in 1924 to 24.8 per cent of sales as compared with 24.9 per cent in 1923. Thus the common figure for net profit in 1924 was 1.3 per cent of total sales as compared with 1.5 per cent in 1923. The common figure for stock turns increased in 1924 to 3.6 as compared with 3.4 in 1923.

Sees Unhealthy Condition

In the greater cost of the jobber's sales force Dr. Copeland saw an unhealthy merchandising condition and one which he charged directly to the retailer. The sales force cost has increased, he said, because of the great number of unproductive calls made and the smallness of the orders received by the jobbers' salesmen. Responsibility for this condition he laid in turn at the door of the garagemen and repair shop operators who he said make little effort to actively sell automotive equipment and supplies. He declared the average garageman and repair shop operator is not a merchant and does not serve satisfactorily as a retail distributor for automotive accessories and supplies.

It was Dr. Copeland's opinion that the great need of the industry is more active selling of automotive merchandise and he believes this will come through large, well-stocked retail stores.

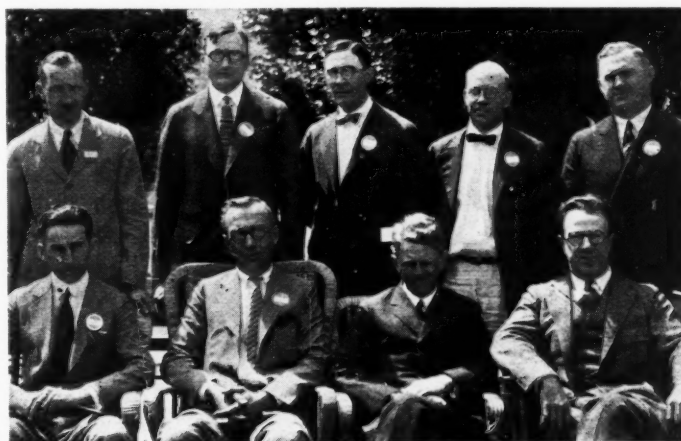
Following his prepared address Dr. Copeland was questioned for more than an hour by both manufacturers and

jobbers who were eager to get suggestions for the improvement of certain specific conditions in the industry. In reply to one of the questions Dr. Copeland stated that price will not sell merchandise, but sales can be increased only by making the consumer want the merchandise and enabling him to find it where he prefers to buy.

The convention approved a proposal to print Dr. Copeland's address and the full text of questions asked and answered by him for distribution to all members of the association. The merchandising committee, of which L. A. Safford of St. Louis is chairman, will have charge of that work.

The convention was unanimous in its decision to authorize the board of directors and a special committee to proceed with negotiations for the consolidation of the

Merchandising Committee



Left to right, sitting—Arthur R. Mogge, merchandising director; L. A. Safford, chairman of the merchandising committee; Dr. Melvin T. Copeland, director Harvard Bureau of Business Research; William T. Morris, president of the A. E. A. Standing—H. E. Ervin, Canadian Raybestos Co., Ltd., Petersboro, Canada; N. H. Ozburn, Ozburn-Abston Co., Memphis, vice-president of the A. E. A.; William E. Wissler, Herring Motor Supply Co., Des Moines; R. W. Proctor, Black & Decker Mfg. Co., Baltimore, and A. C. Storz, Storz-Western Auto Supply Co., Omaha

A. E. A. with other associations in the same field. The particular association with which negotiations are now being carried on is the Motor and Accessory Manufacturers Association with headquarters in New York City. This association has appointed a committee which is to confer with the A. E. A. committee. It is understood that if common ground is reached upon which these two strong organizations can combine an effort will be made to bring in several other organizations working in the automotive field on a national basis.

The chief argument advanced for the consolidation is the elimination of wasted effort that comes from the considerable duplication of the association activities. As it now stands many automotive manufacturing concerns are members of several national associations which perform more or less the same functions. It is believed that if these associations can be combined into one a considerable saving will be effected for the members and this will be reflected in a lowering of the cost of doing business.

At the A. E. A.'s spring meeting at New Orleans a year ago last April Commissioner Webster announced that he would retire this fall. Since that time many members and directors have been active in the effort to have him reconsider his resignation, and the announcement that he had decided to remain in his present position was greeted with great enthusiasm. Mr. Webster, at the request of a number of automotive jobbers, organized the A. E. A. in 1915. At first it was limited in its membership to wholesalers, but later manufacturers were taken in, at first as associate members and later on a basis of equality. Mr. Webster is firmly convinced that the great success achieved by the association has been due to the cooperation of manufacturers and jobbers on equal grounds provided by the particular type of organization.

Morris Reviews Accomplishments

An outstanding feature of the convention was the address of its president, William T. Morris of the American Chain Co., Bridgeport, Conn. Mr. Morris reviewed the activities of the association and outlined some of the work proposed for the next few months. He referred particularly to the proposed consolidation of associations and recommended careful consideration of the proposal in the interest of economy.

The first general session of the convention was held Tuesday morning. On Wednesday morning divisional meetings of manufacturers and jobbers were held in separate halls at the Broadmoor Hotel. Two more general meetings were held Thursday and Friday mornings, the convention adjourning at 1 p. m., Friday.

Definite action was taken on a number of proposals included in the commissioner's report and the board's recommendations, and action on others was deferred for further consideration.

One proposal brought before the convention was for the creation of a merchandise exchange through which jobbers might be able to dispose of surplus or slow moving stocks to other jobbers who might be able to use them. It was found that this situation was covered by one of the association's fair trade practices which recommends that jobbers exchange stocks among themselves after first notifying the manufacturer of the goods that they are to be disposed of in this way, thus giving him an opportunity to take them up if he so desires.

Consider Credit Department

The creating of an extensive credit department came up for consideration. The association already had a committee working on this proposition. The board of directors was given authority to act upon the committee's recommendation when it is ready, taking into consideration the probability of carrying out the consolidation with other associations.

The committee on contact with car manufacturers reported it is making progress in its negotiations with the car makers with reference to the accessory and equipment business. Some of the A. E. A. members have felt that the growing tendency of car manufacturers to turn out cars fully equipped and to sell accessories and equipment through their distributors was encroaching upon the business of the accessory and equipment manufacturers and jobbers. This committee is continuing its work and it hopes that it will be successful in the effort to have the annual service convention of the N. A. C. C. held in Chicago concurrently with the A. E. A. show next November. Heretofore the N. A. C. C. service convention has been held in Detroit in connection with the maintenance equipment show.

Foreign trade possibilities in the accessory and equipment business were emphasized in the report of the Foreign Trade Committee. It was pointed out that the Commissioner has already sent 800 invitations to foreign automotive wholesalers to attend the next A. E. A. show at Chicago in November.

An important report was that of the Replacement Parts Committee.

This report recommended that those jobbers who distribute replacement parts should (1) segregate the parts department; (2) have it on the ground floor with stock bins in view and close at hand; (3) locate it in a convenient place but not necessarily in the main business district, preference being given to the garage district where plenty of parking room is available; (4) use a perpetual inventory and adequate stock control system.

In addition to these recommendations the committee suggested the appropriation of \$3,000 for the purpose of making a survey of the possibilities of simplified cataloging and uniform numbering and listing of parts. This



Panorama photograph of Automotive Equipment Association's summer convention which was held at Colorado

report with its recommendation was approved by the convention.

Twenty new members were admitted to the association at this convention, as follows:

Manufacturers

Allen Electric Mfg. Co., Detroit.
Clifton Mfg. Co., Waco, Texas.
Indianapolis Tool & Mfg. Co., Indianapolis.
Thompson Products, Inc., Cleveland.
White & Bagley Co., Worcester, Mass.
Wolverine Bumper & Specialty Co., Grand Rapids.

Wholesalers

Albany Hardware & Iron Co., Albany, N. Y.
John Andrae & Sons Co., Milwaukee.
Bertram Motor Supply Co., Boise, Idaho.
W. Bingham Co., Cleveland.
Bostwick-Braun, Toledo.
Herrick Hardware Co., Waco, Texas.
Miller Auto Supply Co., New York.
Nevada Auto Supply Co., Reno.
D. F. Owen Co., Tampa.
Peake Auto Supply Co., Kansas City.
Rappole & Robins, Jamestown, N. Y.
Tampa Hardware Co., Tampa.
E. J. Wilson Hardware Co., Beaumont, Texas.
Wolff-Egan Motor Supply Co., Oklahoma City.

Many recreational and entertainment features were provided for the delegates and their families. These included golf tournaments, cards and dancing. The ladies were taken on a sight seeing tour one afternoon and numerous small parties took in the many scenic trips abounding in the Pike's Peak region.

Dr. Copeland's Address

"The Cost of Doing Business" was the subject of the address by Dr. Melvin T. Copeland, director of the Harvard Bureau of Business Research, in which he analyzed the Bureau's survey of the automotive wholesale field for 1924. The reports on which the analysis was based represented 60 per cent of the firms solicited for cooperation, Dr. Copeland said. He considered this a very high and gratifying proportion.

"The outstanding contrast between the figures for 1924 and 1923," he said, "is the increase in the ratio of sales force expense. In 1923, the common figure for sales force expense was 7.8 per cent of net sales; in 1924, it was 8.2 per cent. For several other items, the expense ratios were slightly lower in 1924 than 1923. The wages of receiving and shipping force, for example, were 1.7 per cent in 1924 and 1.8 per cent in 1923. Executive salaries were 2.1 per cent last year, as compared with 2.2 per cent the preceding year. The common figure for miscellaneous expense also fell from 0.7 per cent to 0.6 per cent, a change which, in

this last instance, may have been the result of more careful accounting. The effect of these changes in ratios was to yield a common figure for total expense in 1924 of 25.5 per cent, whereas, in 1923 it was 23.4 per cent. In other words, the total cost of doing business was approximately the same in both years and the only really marked change was in the ratio of sales force expense to sales." Dr. Copeland spoke further in part, as follows:

"The common figure for gross margin in 1924 was 24.8 per cent; in 1923, it was 24.9 per cent. The net profit, consequently, was 1.3 per cent in 1924 as compared with 1.5 per cent in 1923.

Comparison of Figures

"Figures on the cost of doing business are available for several other wholesale trades as well as for the wholesale automotive equipment business, and a comparison of the figures for your trade with those of the other trades is suggestive. Your common figure for the wages of receiving and shipping force was lower than the common figures for that item for the wholesale druggists. Your total interest figure was lower than the total interest figure for the southern dry goods wholesalers, and your losses from bad debts also were less in percentage of net sales than for the wholesale dry goods trade. The ratio of taxes to sales is about the same in your trade as in these others. For practically every other item of expense, however, the ratio is higher for the automotive equipment wholesalers than for the other wholesale trades for which comparable data are accessible.

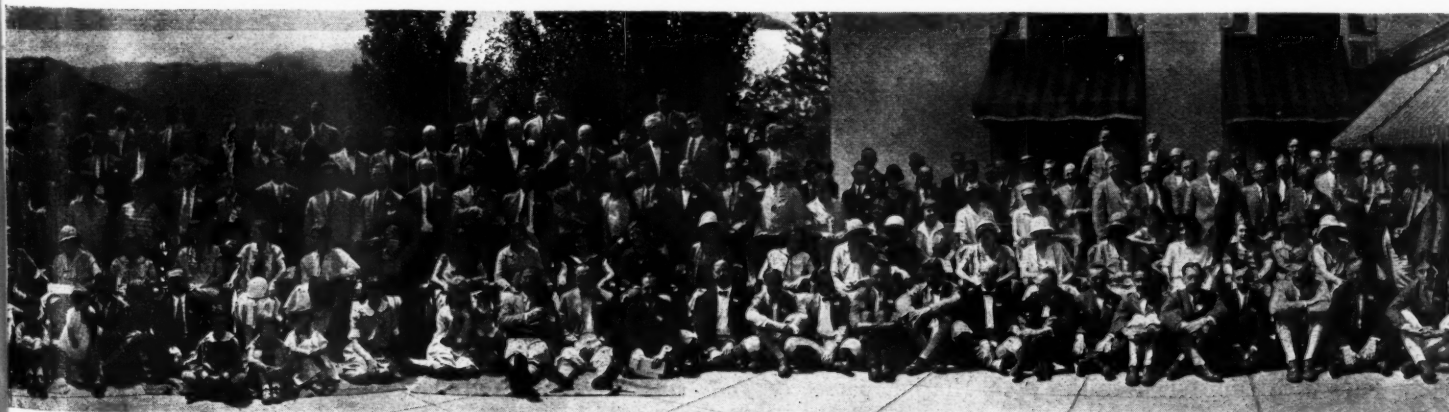
"It is probable that the cost of doing business is lower in the wholesale grocery trade than in other wholesale businesses. In 1925, the average cost of doing business for wholesale grocers was 10.6 per cent of their sales.

"I am not aware, however, of any other wholesale trade in which the expense ratios are as high as in the wholesale automotive equipment business.

"The items of expense in your business which stood in particularly sharp contrast to those of the other trades were the following: Rent, where your figure was 1.2 per cent, as compared with 0.5 to 0.7 per cent in the other trades; office supplies, postage, executive and office salaries, advertising and catalog expense, and particularly sales force expense. The common figure for total sales force expense in this trade, as I have said, was 8.2 per cent of the sales in 1924. This compares with a figure of 3.7 per cent for the wholesale druggists in 1924, 2.6 per cent for the wholesale grocers and 5.7 per cent for the southern dry goods wholesalers in 1923.

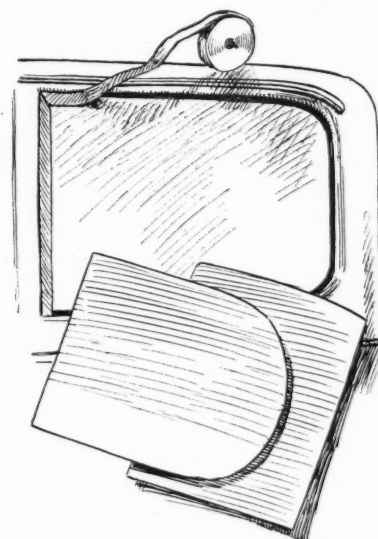
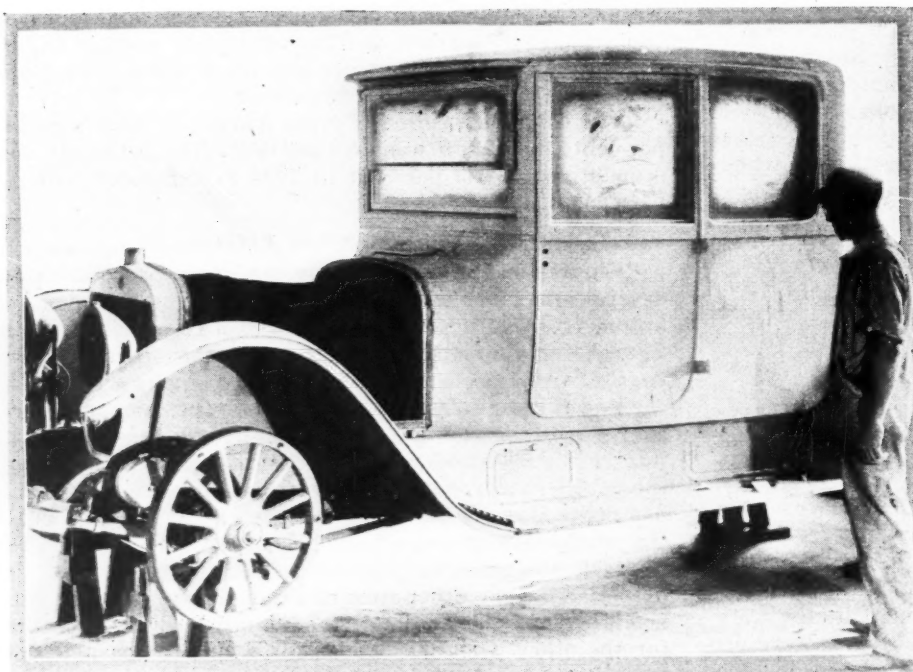
"The contrast between these figures for the various trades are not to be taken as an indication of poor management on the part of the automotive equipment wholesalers.

(Continued on page 18)



Colorado Springs, Colo., last week. Including members of families the attendance approximated 1,000 persons

Preparing a Car for Pyroxylin Finish



The car to be sprayed is prepared by covering the engine, upholstery, etc. In some cases the windows of a closed car are covered with grease, but a more satisfactory method is to cut pieces of heavy paper as shown and secure these in place with gummed tape. Paper and tape also can be used on the body panels

When to Remove All the Old Finish. Methods for Taking Off Paint. Protecting Engines, Upholstery, Windows, Etc.

By B. M. IKERT

WHEN a car is to be refinished by the nitro-cellulose system the first question is whether the old paint should be taken off or whether the new material can be applied directly over the old. In this respect the makers of nitro-cellulose lacquers differ, some stating that under no circumstances should a nitro-cellulose finish be applied over the old paint, while others claim this process is all right.

There are instances no doubt, where the old coats have become sufficiently hard so the solvents in the lacquer will not attack them, but very often the risk is not worth the cost of removing the old finish. It is well to bear in mind that the solvents in nitro-cellulose lacquers contain materials which make very good paint removers and once they penetrate the old surface they go clear through to the metal and effect the under coats.

A car in which nitro-cellulose lacquers have been sprayed over the old coats may look all right for a time, but eventually vibration and temperature changes will break the coating away from the body. With a complete nitro-cellulose system it takes but a little while longer to get down to the bare metal and by building up the various coats there is every assurance of knowing that the completed job will be a good one.

Take Time for Cleaning

Quite a bit of time should be devoted in cleaning the car preparatory to refinishing. In this respect the process is very much the same as in soldering, where cleanliness of the parts is about 90 per cent of the job. Any mechanic or shopman knows that it is impossible to do a good job of soldering over a surface that is not clean and the same holds true with painting over metal that is not perfectly clean.

There are several methods which can be used for re-

moving the old paint. Some use alkali processes to do this, but in such cases it is very necessary that all traces of the chemicals are removed from the metal.

There are of course paint and varnish removers for doing this work and such removers usually contain wax. It is highly essential that all of this wax be removed from the surface which can be done with high test gasoline or wood turpentine. The surface should then be given a final wash with the solvent used for thinning the lacquer.

Rust spots must be sandpapered with a fine grade of paper and the spots should then be treated with some cleaning material, and washed with water. The surface should then be dried and a coat of primer applied as quickly as possible.

How to Know Whether Metal Is Clean

One way of determining whether or not the metal is free from grease and oil, is by washing the body with some of the thinner used as a solvent. If the metal is clean the thinner will evaporate promptly, but where the surface is not thoroughly free from grease and oil the thinner will dry much more slowly and such spots should then be washed in high test gasoline or benzine. The thinner can then be applied again and if it dries promptly the metal is ready for the under coats. Particular attention should be paid to the mouldings, seams and joints and a practical way to determine if they are clean is to spray under them with some of the thinner.

In the case of parts or bodies finished in baked, black enamel this material need not be removed, but can be rubbed down carefully either with water, sandpaper or powdered pumice stone and water. This is then wiped off with denatured alcohol and coated with the nitro cellulose finishing enamel direct.

Some concerns dip the fenders and hoods in tanks of

hot lye to take off baked enamel. When this is done these parts should be washed in clean hot water and the water blown out of the seams by air. Aluminum hoods or fenders should not be put into these lye baths however.

Where the original finish consisted of nitro-cellulose lacquer over varnish type undercoats and it is desired to refinish without removing the old finish, great care must be used not to soften up the varnish undercoats through the old nitro-cellulose lacquer by the application of heavy lacquer coats. Swelling and blistering will result, followed by chipping and peeling. The old lacquer surface must be well rubber down and absolutely free from grease, oil, wax or moisture.

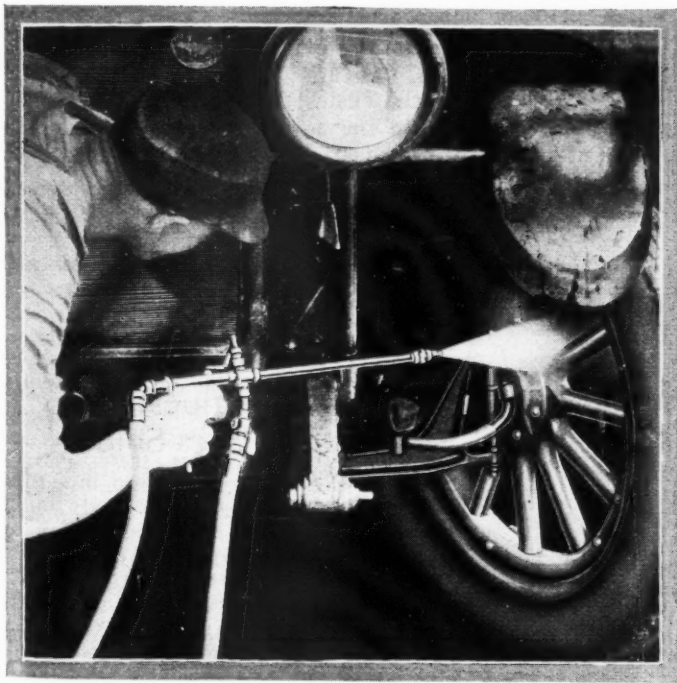
Where finishing varnish has been used over a nitro-cellulose system and refinishing becomes necessary the old finishing varnish may be removed by a mixture of solvents that does not touch the nitro-cellulose underneath. The latter can then be rubbed smooth and the job finished with either more finishing varnish or nitro-cellulose finishing enamel.

One maker of pyroxylin finishes has a special cleaning fluid which has the properties of the solvent for cutting the lacquer materials, but is not so expensive. This fluid is colored green so that it cannot be used by mistake in place of the proper solvent when thinning the enamels as it cannot be used for this purpose. As an added precaution in cleaning moldings, garnish rails, and so forth, can be gone over with a blow torch to make sure nothing remains under them.

An ideal way of cleaning metal bodies is by sand blasting which leaves a perfectly clean surface and eliminates all danger from moisture or wax. It can be especially well used on open cars and also is applicable to closed cars providing the windows, and so forth, are properly protected.

Equipment Will Pay

It is possible to buy equipment for removing the old finish on a car and where a paint shop is called upon to do much work it certainly pays to install such apparatus.



Cleanliness is the big point to watch in the application of pyroxylin finishes. The body and chassis must be thoroughly cleaned and for this some of the apparatus on the market which applies the cleaning liquid under pressure is a big help. It also is a good plan to use a blow torch under moldings and garnish rails to make sure all moisture is out

SAFETY PRECAUTIONS WITH PYROXYLIN FINISHES

IT must be remembered that there is much greater inflammability of the vapors from lacquer than those from varnish. Consequently great care should be taken that no spark, electric or otherwise, occurs where lacquers are sprayed in quantities on account of the low flash point of the vapors produced. The flash point of some of the pyroxylin materials is as low as the freezing point on the Fahrenheit scale and in some cases even lower. The flash point of some of the high grade varnishes and paints is over 150 degrees Fahrenheit.

Spray booths should be used for no other purposes excepting the application of pyroxylin finishes. If this precaution is not taken serious results may occur because the alternating deposits of pyroxylin materials, varnish, ground coats, oil base stains and so forth makes probable spontaneous heating and eventual ignition.

In one of the later articles of this series the matter of safety precautions necessary with pyroxylin finishes will be discussed quite fully. The nature of the materials used in nitro cellulose finishes is such that ordinary precautions are not sufficient. Obviously no smoking should be permitted at or near a spraying booth.

These paint and grease removing units apply chemical hot or cold to the metal of a car and the operator has perfect control at all times. The apparatus consists essentially of a fiber brush which resembles very closely a conventional paint brush, but which is attached to a gun quite similar to a spray gun. By manipulating the trigger and at the same time sweeping the brush the solution is spread on wherever desired. The material of course, is spread under pressure and is given ample time to get a good "bite" into the paint after which the car is washed with water. Here again it is possible to buy equipment for quickly washing the car and drying it at the same time with air pressure.

Since pyroxylin finishes are sprayed on some means must be provided for protecting surfaces which are not to be covered with the particular material being sprayed at the time. For instance, if the space between the two belt line moldings extensively used on bodies of today, is to be finished in a different color the under panels and the upper structures, glass, and so forth, must be protected by masking. On open cars the upholstery must be protected as well as surrounding parts such as the engine. To take care of the engine any material such as canvas or rubber tarpaulin, can be used and the same materials can be used to cover up the upholstery in an open car.

When a closed car is to be refinished all the windows must be closed and protected which can be done in several ways. One of the most popular ways of doing this at the present time is to cut pieces of heavy paper or cardboard in the shape of the window spaces and attach these to the windows by means of gum tape. This is easily removed later on and is much superior to the application of grease to the windows. It is true that grease is easily applied, but it is a much more difficult job to clean the windows later on. Some shops use ordinary paperhangers' paste, but in the long run the best results seem to be obtained by using paper in connection with gum tape.

Paper can also be used on the lower body panels, in between the belt line moulding and so forth. Each car probably will demand a different treatment and this will dictate as to just how the various panels must be protected. Where a car is to be finished in one color only, it is only necessary to protect the upholstery on an open car and only the windows on a closed car.

More Than 600,000 Orphan Cars Now Ply American Highways

*Interesting Facts Concerning This Class of Vehicles Revealed in Survey by
General Manager of N. A. D. A.*

THERE are more than 600,000 automobiles running in the United States today which as new automobiles cost their original buyers approximately half a billion dollars that are today "orphan" cars, that is, cars whose manufacturers have gone out of business since the vehicles were produced, according to announcement by C. A. Vane, general manager of the National Automobile Dealers Association in concluding a survey of automobile ownership in America.

The figures are taken from official registration statistics in the office of the registration officials in the 48 states and the District of Columbia.

"The survey indicates above all things else," Mr. Vane declares, "the necessity of the buyer of the automobile looking far beyond the car right under his eyes when he is in the motor car market. All these cars were just as well painted when they were turned out, had just as good tires and the same number of wheels as motor cars built by substantial manufacturers and sold by reputable dealers, but today their value on the open market wouldn't be ten per cent of the value of automobiles of similar age and type built by substantial manufacturers."

"As all automobiles pass through the hands of from three to five owners on an average before they are finally discarded, the buyer of a new car cannot be too careful in demanding evidences of the financial stability of the company producing the automobile that he contemplates owning."

"Who buys orphan automobiles?"

"The survey indicates an interesting bit of information as to this point."

Orphans and Farmers

"Most people think that a farmer is the wariest buyer who comes into the market, but the ownership of orphan cars indicates that the farmer is far from being the cautious purchaser he is credited with being."

"Our information indicates that 40 per cent of the farmers who own automobiles above the Ford, Chevrolet, Overland, Star price class own orphan cars."

"The reason for this is not difficult to find. Most farmers are price buyers and price sellers. When a farmer turns in a substantial used automobile of the cheaper price class on a new automobile of a higher price class, he goes shopping for the best 'trade-in allowance' he can get for his used car."

"Most of the automobiles that are now orphans were sold with an inflated list price or a trading allowance to catch just such buyers."

When the farmer sized up two automobiles of about the same general style and appearance and found out that the car made by the substantial manufacturer and sold by the reputable dealer would offer him only \$100 or \$150 for his used car, and the other outfit would offer him from \$400 to \$600 for his used car, he took the larger offer for his used car.

The "Never Again" Club

"Anybody who ever owned an orphan car, who has learned how difficult it is to get repair work done on it (and all automobiles have to be repaired no matter how expensive or how good they are) will throw up his hands and say, 'never again' for me."

The most enthusiastic owners of standard automobiles are the people who once owned orphans.

"Who is your 'hard boiled' value buyer?"

"The man who presumably has the least occasion for actual merchandise purchase. The man who handles the least quantity of actual goods throughout his life of any single business man. The banker."

"Only six per cent of the orphan cars of the country are owned by bankers."

This reason too is the easiest to explain. The banker is the hardest buyer in the world because he generally asks himself these three questions when he buys anything:

"Do I want it?"

"Am I willing to pay the price?"

"What have I got after I buy it?"

"Any buyer can ask himself those three questions and if he does, he'll save money not only on automobiles but on everything he purchases."

Making Sure of the Title Certificate

BIRMINGHAM dealers have been bothered in their sales of used cars with the neglect of the salesmen to secure the certificate of title when taking trade-ins. Sometimes the mere fact that a certificate of title is not handy will be enough to throw a monkey wrench in the sale.

The Drennen Motor Car Company of Birmingham has an agreement with its salesmen whereby every one that fails to get a certificate of title within 48 hours after the trade-in is made is fined \$2.50. The agreement is thoroughly understood by all parties concerned and for that reason is perfectly fair.

Needless to say the certificates of title are right on file within a few hours after every trade is made. It seldom happens that a salesman runs over the time limit on securing the important document.

A MECHANIC'S GUIDE BOOK

A 56 page Mechanic's Guide Book has been published by John C. Hoof & Co., 157 W. Illinois Street, Chicago, for complimentary distribution among automobile dealers, service stations and repair shops. This book contains valve timing, dimension and clearance data, together with specifications of timing gears, tapet adjusting screws, valve silencers and other products distributed by John C. Hoof Company.

Honest Values Keep Used Cars Sold

HONESTY is the best policy in selling used cars; in fact, it's the only policy if you leave it to an eastern company which distributes Cleveland cars.

It is much better to make friends than enemies in selling used cars, the Cleveland company believes. Its way of making friends is to thoroughly recondition the cars, put on new tires and other equipment that they may need, and paint them. Then give the buyer the right sort of service on the car. By following such procedure, these Cleveland people say they have never had any trouble in disposing of their used cars.

Rickenbacker Eight Units Redesigned to Coincide With Six

ECONOMIES effected through the re-designing of various important units so they are interchangeable with those of the six-cylinder chassis, making for simpler manufacturing and service operations, and increased production volume, have brought about reductions in price ranging from \$200 to \$600 on the Rickenbacker vertical "8" chassis.

New bodies of more advanced design are mounted on the refined eight-cylinder chassis which are priced by the Rickenbacker Motor Company as follows: sport phaeton, \$1995; coupe-roadster, \$2095; coach-brougham, \$1995 and the sedan, \$2195. A new roadster listing at \$1995 and a seven-passenger "deluxe" sedan at \$2470 will shortly be included. It will be seen that the open car now lists for the first time at the same price as the most popular closed model. In addition, a new line of "deluxe" models having the highest grade of upholstery and selling at \$125 more than the regular models are available on both "eight" and "six" chassis.

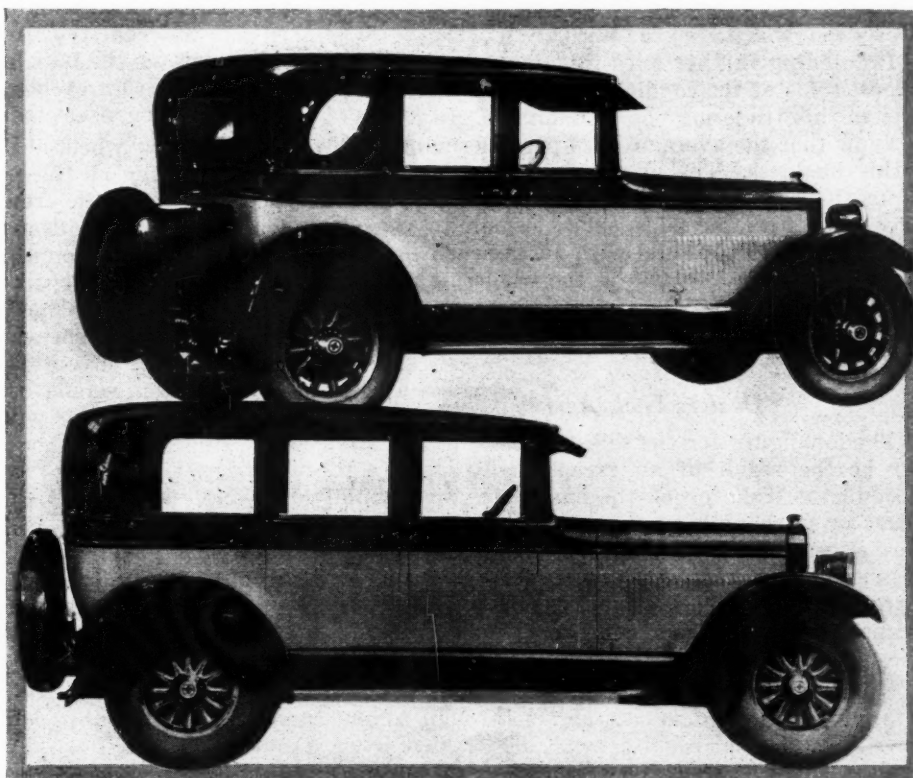
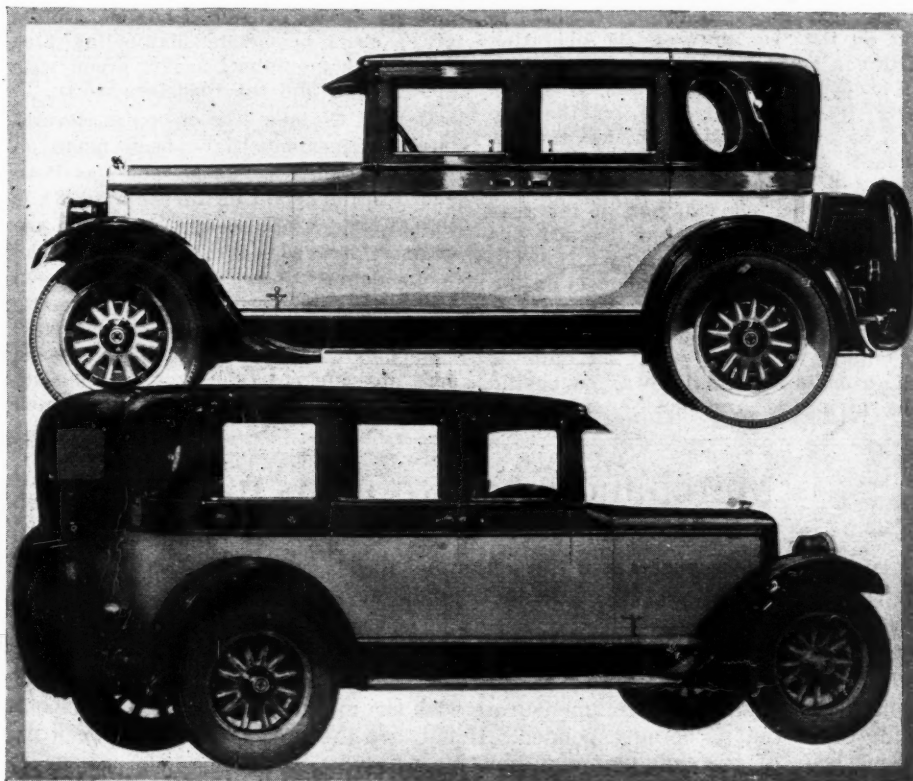
A new line of bodies identical in design, coloring, and upholstery to those on the "eight" chassis are now mounted on the "six" which continues without any mechanical change other than a few minor refinements. The price of the "six" phaeton has been advanced \$100 to \$1495 and the sedan cut from \$1995 to \$1795. In addition to the roadster and coach-brougham which remain unchanged in price, a new coupe-roadster at \$1695 is announced, while shortly a seven-passenger sedan will be included.

Smaller Parts Inventory

Through the standardization of the majority of parts used on the "six" and "eight" chassis, the dealer will be able to carry a smaller inventory in the form of replacement parts for both Rickenbacker models and the customer will benefit correspondingly in having greater facility of servicing, and the lower cost of parts.

The most important change on the new "eight" model lies in enlarging the bore of the engine from 3 inches to 3¼ inches, thus increasing the power output from 72 to 84 hp. With the bore of the "eight" the same as the "six," all parts of the smaller engine are interchangeable with the "eight," with the exception, of course, of such units as cylinder block, crankcase, crankshaft, etc. A larger and more effective water pump is now mounted on the larger engine, most of the parts of the former being interchangeable with those on the "six," while the oil pump and relief valve interchange with the "six."

Among the engine parts which are interchangeable on the two models are, pistons, pins, connecting rods complete; timing chain, sprockets, chain case, cover, valves, springs, push rods, guides,



From top to bottom: The six-cylinder Rickenbacker coach-brougham and sedan; Vertical Eight super brougham and sedan. The six-cylinder bodies are virtually the same as those of the eight. Both six and eight models are finished in a two-tone color

main bearing caps, bearing shells, studs, distributor, drive gears, shafts, generator wiring assembly, parts of the oil lines, the flywheel housing and the bell housing. The clutch throwout is also common to both models.

Simplification of the four-wheel braking system has been made on the larger car so that the hook-up corresponds to that on the "six" and all the operating parts can be used on both models. With the exception of the side rails, all frame parts are interchangeable on the two cars, as are the gasoline tanks, and the fenders, the style of the larger car fenders being adopted for both models. A new heavier construction of the rear axle is employed, while the tire size has been increased from 33 in. by 5.77 in. to 33 in. by 6 in. on all body models on the eight cylinder cars.

All body models on both chassis have a moulding strip starting at the radiator and extending the entire way round the body giving a pronounced double belt

effect and enabling the two-tone exterior finish which is used on all models to be displayed to advantage. With exception in long grain leather, the interior covering of all regular closed cars is in velvet velour, while the "deluxe" models are upholstered in silk faced mohair. The following color schemes are employed in two-tone Duco effects, phaeton, Dublin gray; coach-brougham, Bambalina blue with black moulding; sedan, green with gold stripes and the roadster, brown.

Besides the new line of bodies, several minor refinements have been made on the "six" models. One inch has been added to the height of the radiator, while the thickness of the core has been increased from 1½ in. to 2¼ in. The "coincidental lock" which has been standard equipment on the eight since its conception, is now applied to the "six" also. This theft-proof device, which locks both steering post and ignition, consists of pin tumblers in the bracket which

attaches the steering post to the cowl board. In connection with the new fenders which formerly were used on the "eight" only, metal running boards have replaced the former wooden type while their height from the road has been decreased by 1½ inches.

Tires, 33 in. by 6 in. similar to those on the "eight" are now fitted on both "standard" and "deluxe" special sedan. Wood wheels of natural finish are now standard equipment on all models on both chassis.

The following are the prices now in effect.

Eight Cylinder Chassis

2-4 passenger roadster, \$1995; sport phaeton, \$1995; coach-brougham, \$1995; coupe-roadster, \$2095; sedan, \$2195; 7-passenger sedan, \$2470.

Six Cylinder Chassis

Roadster, \$1595; phaeton, \$1495; coupe-roadster, \$1695; special sedan, \$1795; "deluxe" 7-passenger sedan, \$2070.

Merchandising Problems to Front at A. E. A. Meeting

(Continued from page 13)

"To my mind, the analysis of these figures raises a broad question as to the soundness of the merchandising methods of your industry.

"As I have gone over these figures, I cannot help wondering whether the sales of the automotive equipment wholesalers generally are commensurate with the merchandising effort that is being expended. If not, are the present methods of merchandising automotive equipment the methods that will stand the test of time, The high selling cost and its tendency to increase indicates the possibility, at least, that a negative answer should be given to these questions.

"Proceeding further with this analysis, I should like to suggest some of the conditions to which the higher selling costs in this trade may be attributable. In the first place, we know that the average sales per salesman are not high in this business. The average sales per salesman of the automotive equipment wholesalers were \$40,000. This compares with average sales per salesman in the wholesale drug trade of \$98,000 and with average sales per salesman of approximately \$100,000 in the wholesale grocery trade. In 1922, furthermore, 75 wholesale grocers, among 361 for which data were available, had average sales per salesman of over \$150,000 a year.

Dealers Lack Aggressiveness

"The low figure for the sales per salesman in your trade may be the result of an exceptionally large number of unproductive calls or of the small size of the individual orders or upon both of these conditions. The amount of sales effort apparently required from the sales force of the automotive equipment wholesalers indicates a lack of aggressive selling by the retailers who are your customers, and perhaps also lack of conformity to the buying habits of consumers.

"Many automotive equipment wholesalers, I judge, are seeking to merchandise accessories through a large number of garages and repair shops. The garage owners and repair men who thus constitute their customers usually are not merchants.

"Because of their locations and their lack of real interest in merchandising, many of them, I judge, carry wholly inadequate stocks. The result is that if a consumer starts

out to buy a particular article, he may have to visit a number of these garages or repair shops before he finds it.

"To an outsider, it would appear that a small number of centrally located, well stocked and well managed retail stores could handle the automotive equipment trade in each community to better advantage and with lower gross cost than a large number of garages, repair shops and miscellaneous dealers."

Dr. Copeland finds a suggestion in the study which he said indicates "that the automotive equipment wholesalers are likely, in the future, either to throw their emphasis on a different type of merchandise from that which now constitutes the bulk of their sales or that each wholesaler will become an exclusive distributor at wholesale in his territory for a selected group of manufacturers." He resumed:

"The wholesaler has provided a sales organization for reaching all these small garages and repair shops and for assuming the credit risk involved in selling to these dealers. If conditions in retail trade change, however, the same provision of a force of order takers and the assumption of the credit risk will no longer be the chief service of the wholesalers. Most of the articles which the automotive equipment wholesalers handle need active sales promotion by manufacturer, wholesaler and retailer. If such changes should occur as I have suggested, it means that the wholesaler will assume a substantially greater part of the sales promotion task for particular items than now.

Important Changes

"For the reasons that I have pointed out, it seems to me that important changes are likely to occur in the methods of retailing automobile accessories. Those changes will be brought about by a growing recognition of the buying habits and preferences of consumers and the determination of the line of least resistance in merchandising such goods. If these changes in retail trade do occur, it is inevitable that they will affect the character of the wholesale business."

Dr. Copeland concluded by saying any such change as that referred to would come about gradually, not abruptly, and that wholesalers with most foresight would likely readjust their merchandising plans most readily to fit the new circumstances.

New Studebaker Bus Chassis Uses Big Six Power Plant

FOR some time past the Studebaker Big Six chassis has been operated in connection with bus service, special bodies having been built for this work. Some of these buses have operated from 100,000 to 300,000 miles, the results being so satisfactory that this company has gone a step farther and has built into two special bus chassis, the structural details which have proven their value in actual service. The features which are said to be secured in the new bus chassis are low initial cost, economy of operation, dependability and passenger comfort.

Model A-158 has a wheelbase of 158 inches; Model M-184, a wheelbase of 184 inches.

The long, flexible springs, balloon tires and the tested car construction contribute toward the comfort of passengers.

The Big Six 75 hp. engine is used in the bus, this being a unit power plant, with single-plate dry disc clutch, set in its own subframe to eliminate road torsions.

Engine L-Head Type

The engine is of the L-head type, cast en bloc with removable head, bore $3\frac{3}{4}$ inches, stroke 5 inches. Pistons are of cast iron on $11\frac{1}{4}$ inch connecting rods. Piston pins are 1 inch in diameter. A fully machined crankshaft, inherently balanced and of extra weight, is carried on four bronze-backed bearings of 23 square inches projected bearing area. Such constructions practically eliminate vibration, it is said.

Lubrication is positive, forced to crankshaft, connecting rod and camshaft bearings. Used oil passes through a circular screen; therefore the sump always contains clean oil. The crankcase may be drained by a valve at the side of the engine, without getting under the car.

The carburetor is $1\frac{1}{2}$ inch, double jet, two range, specially designed for the Big

Six engine, with choke on the dash and accelerator of the spherical type for relieving foot strain. Spark advance is automatic, timed by the engine itself. All electric wiring is in metal conduit and the whole ignition system is water proofed, even the spark plugs being protected by rubber shields.

Full control of the lighting system is on the steering wheel, at finger tips, an important safety provision for night driving. An inspection lamp, with extension cord, is located on the instrument board.

Semi-floating rear axle is housed in truss construction with one removable plate to admit directly to the differential. Axle shaft is $2\frac{1}{4}$ inches in diameter.

Springs are semi-elliptic, two inches wide. The front springs are 38 inches long, those at the rear, 56 inches long. Fenders (on the front only) are of 19 gage pressed steel, double crowned and concentric to the steel disc wheels, which carry 34x7.3 6-ply tires. Dual rear wheels and tires are optional on the M-184 chassis.

Service brakes are the Studebaker hydraulics on four wheels (licensed under patents) impossible to lock. Hydraulic equipment is at the rear of the transmission case, where two opposed cylinders, actuated by a force pump, impart a 60-40 proportioned force of 200 pounds on rear and front wheels, respectively. Driven by the propeller shaft, it is impossible to lock, since stoppage of motion of the shaft ends the compression in the cylinders.

The emergency brake works with the direct pull of a latching, pistol grip projecting from under the center of the instrument board.

The frame has side members $7\frac{1}{8}$ in. deep, of $\frac{3}{8}$ in. steel, with $2\frac{1}{4}$ in. flanges on the Model A-158. On the Model M-184, the flanges are 3 in. wide and the channel is 8 in. deep at the center with a $4\frac{1}{2}$ in.

channel beam running 40 in. beyond the rear axle.

On the Model A-158 the seven regular frame cross members are supplemented by a $3\frac{1}{2}$ in. tubular cross member. On the longer model, this supplemental bracing consists of two $3\frac{1}{2}$ in. tubular cross members in the center and an additional $2\frac{1}{2}$ in. tubular cross member at the rear.

The propeller shaft is in two sections with center ball-bearing steady rest, and two Spicer universal joints.

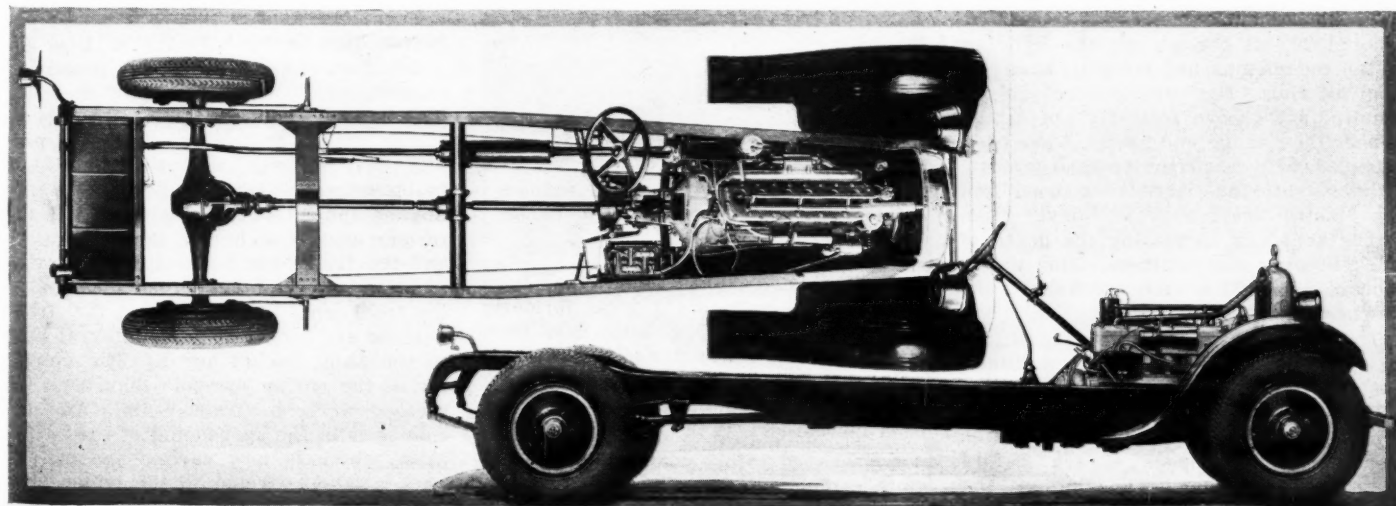
The gear ratio on both models is 4.7 to 1, which maintains the Big Six engine at its most efficient speed under average running conditions.

Standard Equipment

Standard equipment on both models includes a front bumper, extra wheel, tire and tube, motometer with winged radiator cap, combination stop-and-tail light and inspection lamp. All instruments are grouped on a walnut-finish board under one oval glass indirectly lighted against a silvered background. Instruments include a high-grade eight-day clock, ammeter, speedometer, oil gage, a gage showing the number of gallons of gasoline in the 19-gal. tank, and one showing the hydraulic pressure of the four-wheel brake systems.

The radiator is the regular Big Six type, with hood and dummy cowl for driveaway purposes. Studebaker engineers and body designers have collaborated with several outstanding bus body builders in designs for bodies built to these chassis and this designing service will be available for all purchasers of the chassis.

Model A-158 is for 12 to 15 passengers, the chassis price being \$1,785, f. o. b. factory. Model M-184 is for 15 to 20 passengers, the chassis price being \$2,150 f. o. b. factory. Both models will be in production in July.



Studebaker Big Six bus chassis showing particularly well the supporting means for the propeller shaft at the middle of the frame

Novel Crankshaft Is a Feature in the Improved Cunningham

Appearance of Car Changed in Addition to Detailed Revisions in Engine and Chassis Mechanical Four-Wheel Brakes Standard Equipment

CHIEF among a large number of refinements which have been made recently in the Cunningham passenger car chassis is a two-plane, counter-weighted crankshaft which puts its 90 deg., V-eight engine in inherent balance. In addition to the detailed mechanical changes in the engine, axles and other parts of the car, its appearance has been improved by the adoption of a new radiator design and Perrot-Bendix mechanical four-wheel brakes have been made regular equipment.

The arrangement of the crank throws in two planes at right angles to each other and the counterweight is illustrated. As a forging, the crankshaft is of particular interest for the reason that a considerable portion of the mass of the counterweight is integral with the shaft. Another unusual feature of this shaft is the manner in which the additional weights required to balance the inertia forces, are attached. As shown, a large, tight fitting dowel takes all the centrifugal stress, screws being used merely to clamp the weights together. The dowel is locked against endwise motion by peening over the edges of the holes in the weights as shown.

Crankshaft Stiffer Torsionally

The new crankshaft also has been made considerably stiffer torsionally, its main journal and crank pin diameters having been increased from $2\frac{1}{4}$ to $2\frac{3}{4}$ and $2\frac{1}{2}$ in. respectively. To simplify adjustment for end play, crankshaft thrust now is taken at No. 1 bearing, which is provided with a flange for the purpose. The pistons have been made $\frac{1}{2}$ in. longer above the pin and a corresponding reduction has been made in the length of the connecting rod, which is now machined all over.

As the counterweights increase the amount of oil thrown on the cylinder walls, the pistons are fitted with an Indian oil ring. For the same reason the longitudinal groove formerly cut in the connecting rod big end bearings has been replaced with a circumferential groove. Shimless bearings are being used and the main bearing caps have been strengthened by increasing the depth of the stiffening ribs on them. Due to the increased weight of the crankshaft, the flywheel has been lightened.

The engine now fires 1R, 5L, 4R, 8L, 6L, 3R, 7L and 2R and its valves are timed as follows: Inlet valve opens and exhaust valve closes at 5 deg. after top center. The inlet closes 51 deg. after and the exhaust opens 41 deg. before bottom dead center. In addition, the valve lift has been increased from $\frac{5}{16}$ to $\frac{3}{8}$ in.

As in the past, the valves are operated through the intermediary of rocker levers. These levers are now bronze bushed at the rocker shaft and the cam rollers are fitted with hardened steel bushings. The end actuating the valve tappet has been provided with a renewable hardened steel button with an integral pin on its under side which fits into a hole in the rocker arm. The button fits between two lips forged on the top of the rocker level and is locked in place by peening the edges of these

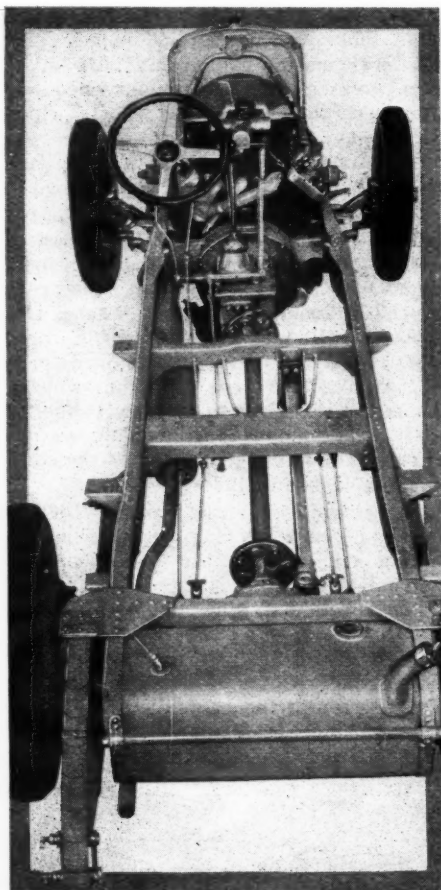
of the hot air stove to muffle the noise at this point. The chassis has been cleaned up and more space provided for the tool box and battery by the elimination of one exhaust pipe and muffler. The two exhaust manifolds now discharge into a Y-connection to which a single exhaust pipe leading to the muffler is connected. In as much as a dash gasoline gage is being furnished as regular equipment, the need for a reserve fuel supply has been eliminated and this feature is no longer incorporated in the gas tank.

The outlet connections of the water pump have been simplified and the provision for taking impeller thrust improved. The hoses now connect directly to the outlet pipes instead of through the intermediary or flanged members as formerly. The bushing supporting the front end of the pumpshaft has been provided with a thrust flange and a self-lubricating washer is installed at its forward end.

Difference in Rear Axle

The rear axle differs from the unit used in the past chiefly in the method of supporting the pinionshaft. The shaft is supported in two opposed taper roller bearings forward of the pinion and in a Hyatt roller bearing aft. The arrangement of the taper roller bearing provides for thrust in both directions and provision is made for wear adjustment. The position of the pinion with respect to the ring gear may be altered by removing or introducing shims between the differential carrier and a flange on the sleeve carrying the two opposed roller bearings.

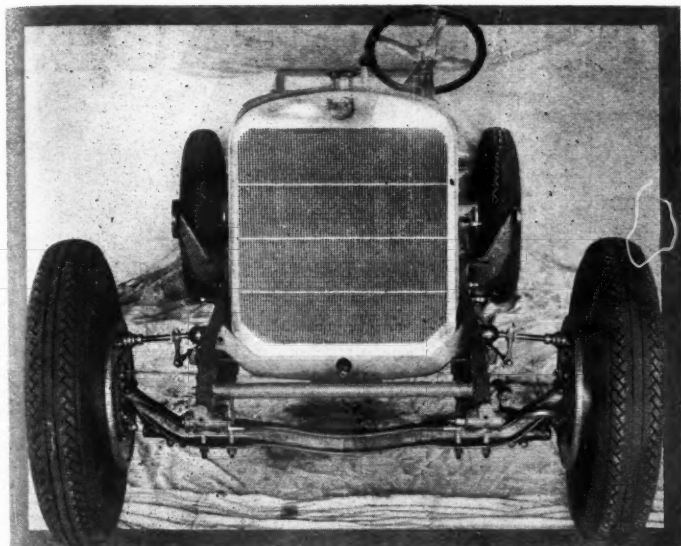
The front axle is now a reverser Elliott design with ball thrust bearings and transversely inclined king pins. The reduction ratio of the steering gear has been increased from $8\frac{1}{2}$ to 1, to $11\frac{1}{2}$ to 1, this change having been made to provide easy steering with the 33x6.75 in. balloon tires, which are offered as standard equipment. The front end of the torque arm now has a fabric support, and the frame has been stiffened by the addition of a tubular cross member at its front end. Supports for the front bumper are provided as an integral part of the front spring horns. The diameter of the spring eye-bolts has been increased to $\frac{3}{4}$ in. from $\frac{5}{8}$ in. Another change is in the suspension of the power plant which is now carried by pressed steel brackets riveted to the frame side rails, the wood block construction used formerly having been discarded.



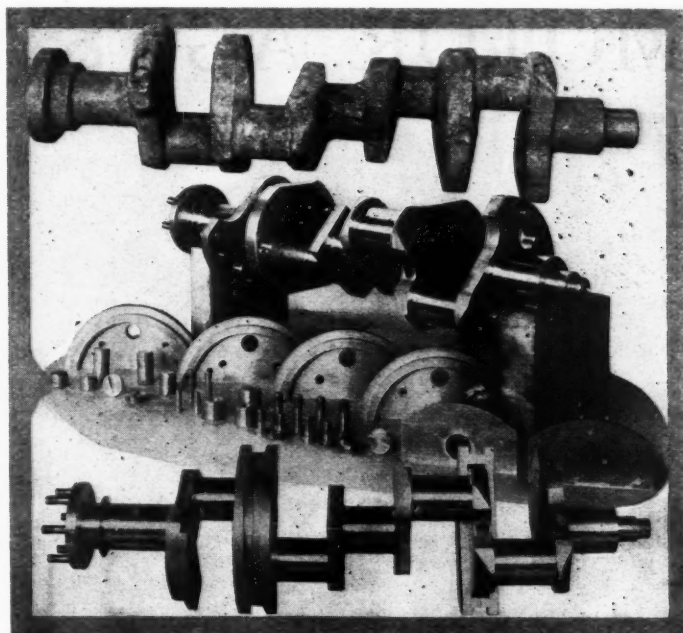
The chassis showing the single exhaust line and muffler and the new intake manifold

lips. The valve spring length has been increased $\frac{1}{8}$ in. and the cups formerly employed at their upper ends have been eliminated, the lower flange of the valve guide being used to center the spring. The face width of the timing gears has been increased $\frac{1}{16}$ in.

A T-shaped intake manifold, which is more completely water-jacketed, has replaced the Y-design used formerly. A change also has been made in the design



Front view of Cunningham showing new radiator design and the front wheel brake installation. The four-wheel brakes, are of the Bendix-Perrot three-shoe serve type and are said to multiply the pressure applied at the pedal by over $2\frac{1}{2}$ times. Although one set of brakes is used for service and emergency, adequate safety is provided, as, should the rods leading to one, two or three-brake fracture, the intact rods would still function



From top to bottom: The crankshaft forging; the crankshaft disassembled showing counterweights, dowels and clamping screws; and the crankshaft with counterweights attached

The four-wheel brakes are of the Bendix-Perrot three-shoe serve type and are said to multiply the pressure applied at the pedal by over $2\frac{1}{2}$ times.

The brake cross shaft is unusually stiff, being made of $1\frac{1}{8}$ in. outside diameter, steel tubing with a wall thickness of $\frac{7}{32}$ in. This provides free motion under any condition of frame distortion and the shaft itself shows no perceptible deflection under any load the driver can exert. The stiffness of this shaft together with the fact that the rods are of large section and are under tension only, means that small motions of the pedal or hand lever will result in pro-

portional movement of the cams.

The hand brake lever is designed so that when the brake pedal is down against the floor, there still is 25 per cent of effective travel in the hand lever. The leverage between the cross shaft and the cams is arranged so that the mechanical advantage on the rear brakes is 1.85 to 1. as compared with 1.65 to 1 on the front brakes. Consequently, there is little tendency to lock the front wheels and in addition the system has the Perrot characteristics of releasing one front wheel on making a turn.

Although one set of brakes is used for service and emergency, adequate safety is provided as, should the rods leading

to one, two or three-brake fracture, the intact rods would still function. It is altogether improbable that all four brake rods would fail simultaneously or that connections from the pedal and hand lever to the cross shaft would both break.

Brakes are easily adjusted to give equal retarding effects on each wheel by jacking up the car and adjusting the nuts on the extreme ends of each brake rod until the pull measured by the spring scale is equal on each wheel, the spring scale being attached at the same distance from the wheel center in each case. The brake drums are of high carbon steel and have a stiffening flange.

N. A. C. C. Owner Booklet

THE little booklet published by the National Automobile Chamber of Commerce, which car makers and dealers are being asked to put into the hands of owners, is full of sensible boiled-down advice on the care and operation of a car in the interest of both safety and economy. The booklet is intended to assist the new car owner in getting the most satisfactory service from his car at the lowest cost. The title is "Getting the Most from Your Car."

Under the heading of, "Rules for Keeping Upkeep Down," this advice is given:

Take advantage of the dealer's offer to inspect your car at frequent intervals while it is new. It will keep little troubles from growing to big ones.

Drive the first 500 miles not faster than 20 miles an hour.

Drive the second 500 miles not faster than 25 miles an hour.

Never race the engine, especially in starting in cold weather before the oil warms up enough to circulate.

Shift gears when the engine labors on hills.

Give proper attention to lubrication, oiling often enough (according to the car

maker's instructions) and using the right grade of oil or grease.

Oil is cheaper than repairs—change crankcase oil every 300 miles in winter

Police Find 38 Pct. of Brakes Faulty

HARTFORD, Conn., June 27.—Thirty-eight per cent of the brakes tested by the Hartford police a few days ago proved to be faulty, a condition that Chief of Police Garrett B. Farrel calls alarming. The chief has made it known that from now on any brakes that do not work will result in a trip to court for the car owner. The tests were conducted in various parts of the city, it being the practice of the police officers to stop owners and ride along with them and on arriving at the test section command the brakes be worked. Several fines resulted from the tests.

and 600 miles in summer. If the maker recommends it, use a lighter grade in winter than in summer.

Keep nuts and bolts tight.

Have brakes and steering gear frequently inspected.

Keep headlights adjusted so as not to glare.

Keep the radiator filled—in the summer with pure water; in the winter with an anti-freeze solution.

Keep tires properly inflated—too little pressure shortens the life of the tires; too much shortens the life of the car.

Avoid sudden stopping or starting. Sliding or spinning the wheels wears tires more than many miles of normal use.

Spare the battery. Prolonged cranking is unnecessary if the ignition and carburetion conditions are right.

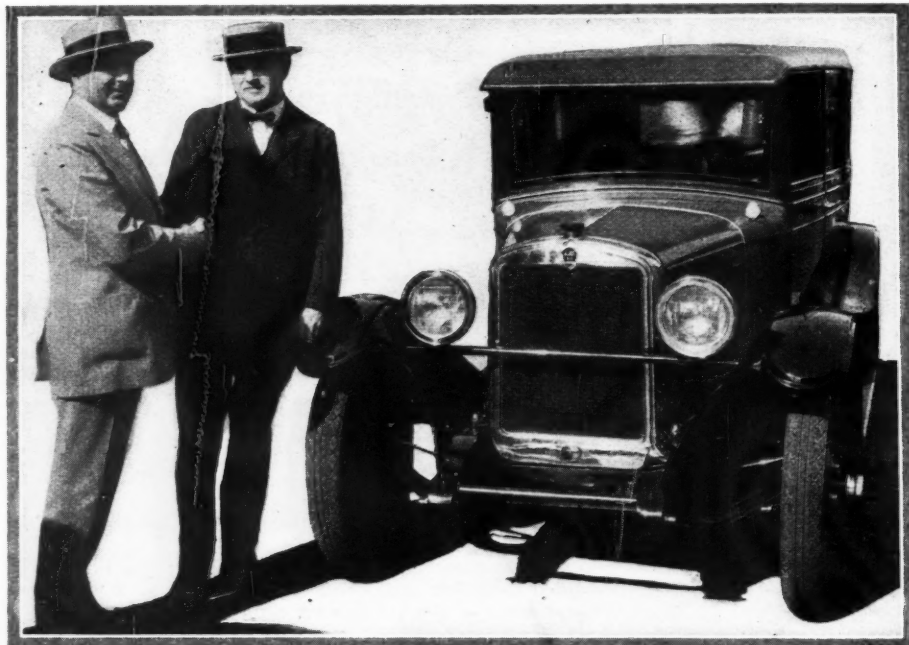
Keep battery filled with distilled water and watch the state of charge. A fully charged battery never freezes.

Adjustable bearings should be kept snug, because wear accelerates as it progresses.

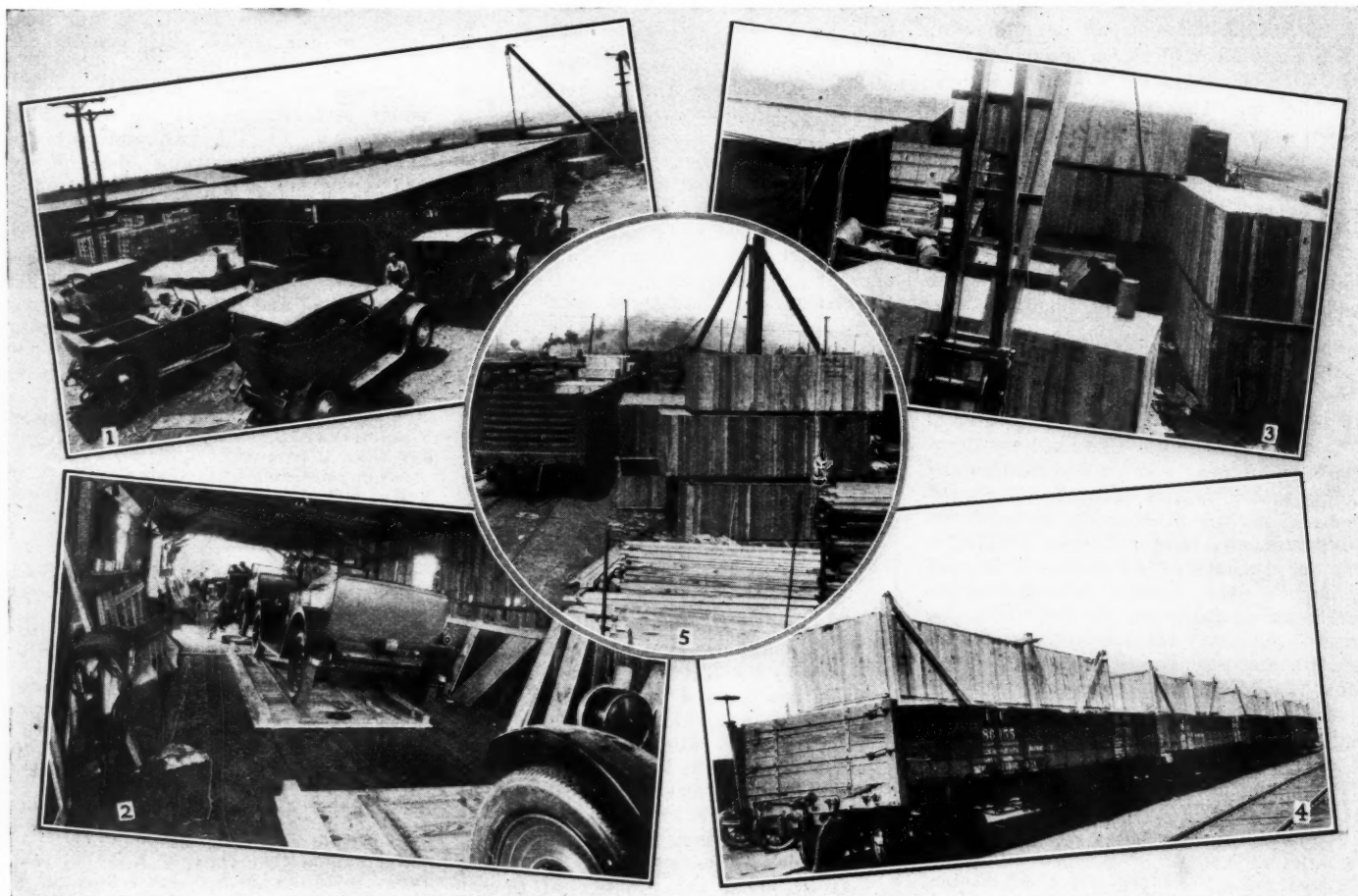
Put your rear tires on the front when they have become well worn.

There is a chapter devoted to "Common Sense in Driving," which gives many suggestions for the avoidance of accidents.

MOTOR AGE'S PICTURE PAGES

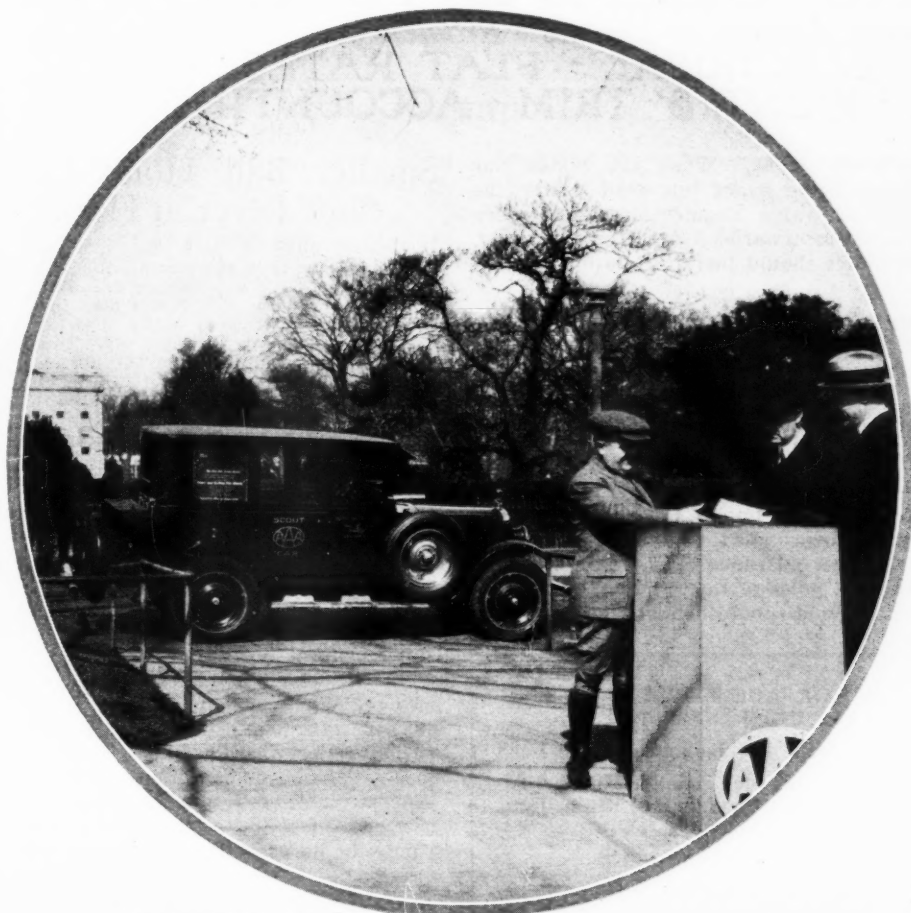


THE FIRST SALE. Here is shown a front view of the Ajax, which recently made its debut. Rudolf Hokanson, vice-president and treasurer of the Nash Sales Co., Milwaukee, is seen with Walter J. Wilde, U. S. Collector of Customs for Wisconsin, the first retail buyer to acquire one of the new vehicles. Mr. Hokanson is one of the oldest automobile merchants in the state, starting in 1900

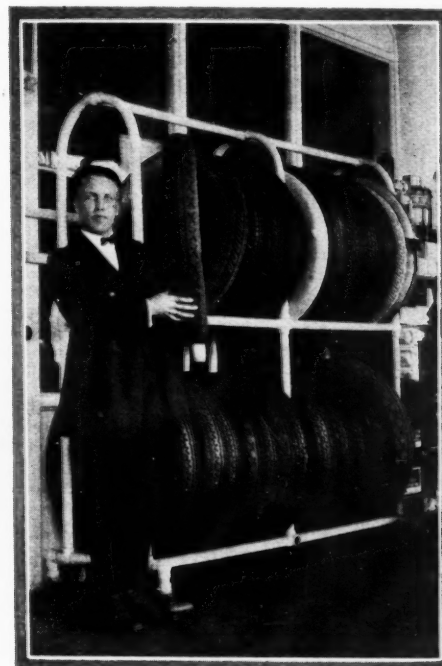


EXPORT DEMAND BRISK. Reports from the Moon factory are that export sales for the first five months of 1925 were 50 per cent ahead of the same period last year. The pictures show some of the steps in getting a vehicle ready for foreign shipment: 1—Where the cars start on crating line at the Madison, Ill., boxing plant; 2—Interior view of crating line; 3—End of line and hoisting derrick; 4—Part of a single order for 200 cars on way to England; 5—Vehicles being loaded for export.

OF AUTOMOTIVE INTEREST



AUTOMOTIVE VERSATILITY. For the past nine months an Oldsmobile Six has been the business office and only means of transportation of C. G. Gale of the Motor Wheel Corp. Mr. Gale is installing service stations and distributing centers for his company.



PORTABLE TIRE RACK. In the accessory department of Chester N. Weaver Co., San Francisco, a portable tire rack has been built from pipes which can be easily moved from place to place. In view of the limited space occupied by the department, this system has been found especially convenient



FOR LIGHT DELIVERY. This miniature car, used by a Los Angeles cleaning establishment, is said to be the smallest automobile in the United States engaged in actual commercial use.

The READERS' CLEARING HOUSE

Questions and Answers on Dealers' Problems
BUILDING - ELECTRICAL - FLAT RATES
SHOP - LEGAL - PAINT & TRIM - ACCOUNTING

Low Gas Mileage Due to Poor Compression

Q.—I have a 1924 Maxwell car that is not giving the service that it should and the owner has not been able to get more than 10 miles per gallon of gasoline. The carburetor has been changed, valves have been ground and tappets set up. Ignition has been checked three or four times and still no change in the mileage. The car seems to work well in every way. If you could give me any idea what the trouble may be and the remedy for same I would greatly appreciate it.—The Sixth Ward Garage, 2320 Union avenue, Altoona, Penn.

If the tappets are set to the proper clearance it would seem that the only remaining cause would be blow by past the pistons. When the engine is running and is fairly warmed up remove the oil filler cap and note whether there is any amount of smoke or vapor coming out of it. Also when the engine is throttled down listen with the ear near the cylinders to note whether you can hear any hissing or blow by past the rings. It is possible that at some time during the life of the car it has been run slightly dry due to high speed or insufficient lubrication with the result that the rings are scored slightly and compression is leaking.

Removal of the piston assembly and examination of cylinder walls will clear up this point. Although it is not an accurate test it is possible to determine the condition of the engine by testing the compression with a gauge and comparing the reading with that of a normal car of the same make and model. In case compression is lower or a blow by is heard it will mean replacing the rings and perhaps the pistons and refinishing the cylinder bore walls.

Gears Out of Line Change Timing Slightly

Q.—Would like to know if a cam gear or spiral cut placed about $\frac{1}{4}$ of an inch from flush with the other gears would cause any change in the valve timing? The gears all mesh up O. K. as per punch marks only. The cam gear became pushed in farther and will only stay in that position with dowel pins in holding camshaft bushings. Would this cause any difference on account of the spiral gears. Motor is not ready for running yet. Possibly it might cause gear noises but that wouldn't matter as long as the valve openings would be correct.—Sidney Topness, Taylors Falls, Minn.

With the cam gear $\frac{1}{4}$ or $\frac{3}{8}$ inch back from the edge of the others there will be a change in the valve timing of a few degrees. With this sort of mesh the gears also will be very noisy. To find out how badly out of time the valves are remove the cylinder head and with it off turn the engine over slowly by hand. Watch the action of the valves and turn until the engine is starting up on the

exhaust stroke. When the piston has reached the exact top dead center the exhaust valve should close and very shortly afterwards, 5 degrees to be exact, the inlet should just start to open.

PERSISTENCE WINS IN TWO YEARS

Q.—I have located a click in a Ford car after hunting two years for same. The keeper plates of two of the magnets on the flywheel were striking the poles of the field winding due to a slight twist in the magnets in question.—P. B. Fitzpatrick, Indianapolis, Indiana.

A condition of this sort is no doubt difficult to find unless the engine is thoroughly overhauled. Then in checking the $\frac{1}{32}$ inch clearance between the magnets and the poles of the winding a condition of this sort should be discovered.

Smaller Ball Holds Gear Shift Lever in High

Q.—We have a 1924 Essex coach in which we changed the engine, installing a 1925 engine. We are having trouble with the transmission. It will not stay in high gear when drifting or when slowing up for rough places in the road. We thought at first it was end play in the clutch but have taken all the play out of the clutch shaft and still have same trouble. We had no trouble with the 1924 engine.—R. L. Starr, 643 Sage street, Evanston, Wyo.

It is probable that the thrust washers in front of the front gear in the transmission are worn so that this gear is too far forward and does not mesh very closely with the high speed gear immediately behind it. A remedy that you might try is to remove the $\frac{1}{2}$ inch steel ball which is used to engage with the notches in the shifter shafts and replace it with a $\frac{7}{16}$ inch ball which will mesh more deeply, into the V shaped notches.

This will necessitate stiffening the spring which operates the ball or using a new spring and may necessitate using spacers in order to get stiffer spring action. If this fails to prevent the trouble it may be necessary to remove the transmission and clutch, taking the clutch away from the transmission. It will then be necessary to install new thrust washers so that the front gear of the transmission will be properly located and will give the correct depth of meshing when in high. End play in the transmission shaft rather than in the clutch is doubtless the cause of this condition.

INDIAN MOTORCYCLE TIMING

Q.—Would you give me the correct valve timing and correct setting of the magneto for an Indian motorcycle, single cylinder motor No. 42E 965.—W. F. Dougal Garage, Van Wert, Ohio.

According to information supplied by the local branch of the Indian Motorcycle Company the exhaust valve should close on top dead center. The gears in this engine are marked at the factory and if they are lined up the timing will come out correct. Alignment of the gear as regard marking should start with the two gears which mesh with the flywheel pinion inside of the crankcase. There is also a mark on the flywheel which indicates the center position and which should be at right angles to the gear mark.

With regard to the gears set into the gear, the markings, which may be alphabetical or numerical should run straight across the first one being in alignment with the mark on the gear case and the others in line with it such as A to A, B to B, or 2 to 2, and 3 to 3.

The ignition setting is conventional in that the spark should be timed so that with the magneto in full retard position it occurs at top dead center.

MOTOR AGE READERS' CLEARING HOUSE INDEX

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Planning Your New Building

By TOM WILDER



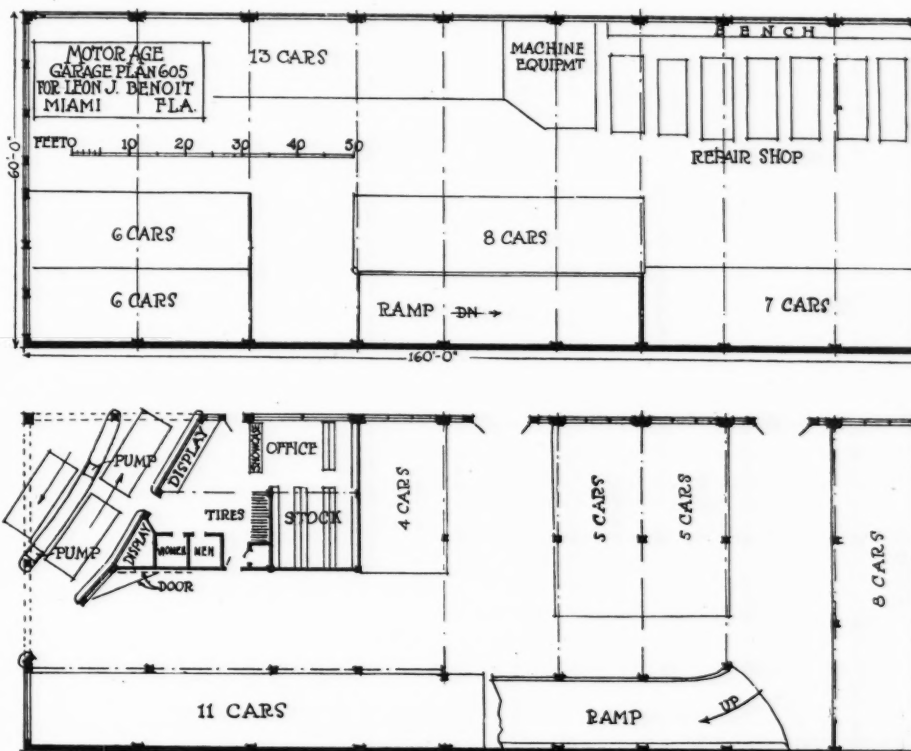
Repair Shop for Florida

Q—I want to build a garage down south in Miami, Florida, on a lot 60 by 160 feet. Enclosed you will find diagram. We would like a door in front (south) and a door on the west side and oil and gas filling pumps on S. W. corner. Also a wash rack, office and work shop on ground floor. The garage to be a two-story. We would like a ramp to the second floor. See profile. Except the oil filling pumps you can lock the doors (both front and side). Make office, work shop and wash rack where you believe it is best; also show where and how many supports we ought to have to support the second floor.—Leon J. Benoit, 622 N. W. 20th Street, Miami, Fla.

We have laid out your plan about in accordance with your diagram, but have made a change in the location of the ramp in order to save parking space for cars. You have asked that the repair shop be on the main floor, but we are very much opposed to this, due to the fact that the lighting arrangements cannot be as good as upon the second floor, where you can have the benefit of skylights as well as side windows.

Besides this, it is well to have all the storage possible on the main floor, sending only the overflow to the second floor. The front part of the storage room on the first floor, could very easily be converted into a show room, if at any future time you decide to handle new cars. In fact we would be inclined to close up the front door anyway as it will interfere more or less with the cars stopping at the filling station and these in turn will interfere with cars going in and out.

The wash rack we would place at any



The front part of this garage might be converted into a car showroom by changing the door to a window

one of the corners next to the side street, using a 3-car space, so that two cars may be washed at once or three cars may be stored when the rack is not in use.

We have shown supports for the second

floor placed to the best advantage for car storage; should you alter this arrangement of cars the supports should also be rearranged, so that the spacing is proper.

Legal Questions Answered—

By WELLINGTON GUSTIN
of the Chicago Bar

HOW TO COLLECT UNPAID CHARGES

Q.—Would you be kind enough to advise us just what steps are necessary for us to take in order to sell a car which was left with us for storage? Car in question was left at our place in November of last year, with instructions to repair same. Owner ignores our statements and letters.—Automotive Service, Inc., Mt. Vernon, Ill.

You have a lien for the repairs called a common law lien, but under this lien you are only given the right to hold the property for payment.

Now under the recent garagekeeper's lien act you are given a lien covering both repairs and storage. But to keep this lien alive you are required to file a lien notice with your county recorder within 60 days from date of delivery of the automobile to the owner. The form of the lien is set out in the act found in Chapter 82, section 46 of the Illinois Statutes. This lien may be foreclosed by advertisement and sale of the car in the manner set out by the statute found at section 50, same chapter. This section is too long for quotation.

If there are no other liens to upset you on this car, you can hold the car and bring suit and take a judgment and levy on the judgment and sell in this manner.

Q—I have been taking MOTOR AGE for the last 3 years. I would now like to get a little advice. A brings car in for repairs and material, and the job is done satisfactorily. One month later A trades car in on new one. Can B hold new car for repairs done on old car? Advise how B can collect bill due on old car.—John D. Daech, LaSalle, Ill.

You have a repair lien upon the repaired car only. This lien is good against the car for 60 days after delivery of the repaired car, at which time it ceases unless within this period you file a lien notice with your county recorder as required by law. The statutes provide a blank form to follow in making and filing your claim.

You should notify the present owner of the repaired car that you have a lien and intend to help same, and it may be that this owner will see that you are

paid your claim. But you cannot neglect this settlement beyond the 60-day period, unless you have the promise of the present owner to pay, and then, only, if you consider this said owner personally good for the amount. If you do not get settlement within the 60 day period (being 60 days from the date of the delivery of the car as repaired) you should before the end of the 60th day file your notice of lien, and proceed to foreclose in the manner set out by the statute. You do not have to wait, but can foreclose at any time.

AC PLANT SHOWS GROWTH

FLINT, Mich., June 27.—Organized in 1908 with a dozen employees and a production capacity of about 300 spark plugs a day, the plant of the AC Spark Plug Company at Flint has grown to where it now employs over 1500, with a production capacity in excess of 200,000 spark plugs, 8,000 speedometers and several thousand air cleaners daily.



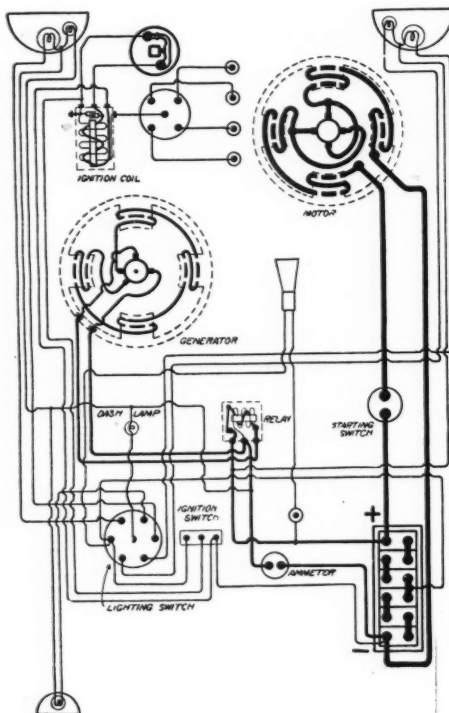
Clearing Up Electrical

EDITED BY A. H. PACKER

Change the Condenser or Use New Coils

Q.—Supply wiring diagram of Moline Knight which had a 12-volt battery. This engine starts hard and will hardly run. Could this trouble be in a weak coil. Someone had this wired direct to one-half of the storage battery. A. C. Glinke, Palmyra, Wis.

Wiring diagram is published in accordance with your request. You will notice that this shows a wire connected to the center terminal of the battery and going to one terminal of the switch and then over to the ignition switch. This would apparently indicate that a 6-volt ignition coil is required and that the connection should be made to one half of the battery. If the ignition is poor a new coil should be tried for both the condenser and the windings are in the coil unit. If the trouble is in the condenser a good electrical shop can change the defective unit, but the time required is such that it might pay to use a new coil. It is of course, possible that the interrupter points are burnt away and need replacing or that there is a poor connection in the circuit.



Moline Knight Wiring

GENERATOR LAZY AT 20 M. P. H.

Q.—We have a Ford generator which cuts in at the right speed and charges all right but will not charge 20 amperes unless a speed of 35 miles per hour or more is reached. The third brush adjustment is set as far as it will go and it seems to charge higher when the commutator has just been cleaned, but this lasts for a short time only. Formerly it would charge 20 amperes at 20 miles per hour. New brushes have never been installed and we wonder if this would correct the trouble. —C. M. Ford.

Oil working from the rear bearings on to the commutator will be soaked up by the brushes and will give trouble. However, this usually shows up by a generator failing to cut in, the difficulty being due to a film of oil acting as an insulator between the brushes and commutator. It is also possible that oil soaked brushes might cause trouble of which you complain especially in view of the fact that cleaning the commutator seems to correct the condition temporarily. As the brushes are not very expensive it might be well to try this.

The charging rate of 20 amperes, however is more than you require for summer conditions although it is all right in winter if the car is not run for excessive periods. Another possibility is that the brushes fit the commutator somewhat better than they did when the generator was new. It might be well to check the main brush position by running the generator as a motor with the third brush

lifted. There should be no appreciable tendency for the armature to rotate, although it is permissible to have a slight tendency for it to turn in the normal direction. It is also possible that the armature is slightly shorted and there is enough leakage of current to cause the condition you describe.

ONE OR TWO WINDINGS IN MOTOR GENERATOR ARMATURE?

Q.—"A" says that the armature in the North East generator used on Dodge Brothers cars has a primary and secondary winding, or two distinctive windings. "B" says there is only one. Who is correct?—E. G. Hill, 1247 DeQueen boulevard, Port Arthur, Texas.

"B" is correct, for there is only one winding in the armature of the North-East generator used on Dodge Brothers cars. Perhaps "A" is thinking of Delco motor generators, which have two commutators and two windings, each electrically separate from the other.

CHARGING FORD MAGNETO

Q.—Having seen a write-up in Motor AGE about what Motor AGE medicine did to a Ford magneto, would like to know just how this was done with the batteries and how to connect same. — Henneke Brothers, Cuero, Texas.

Instruction covering charging of the Ford magneto without removal from the car was printed in the March 12 issue of Motor AGE on page 26 of the Clearing House section.

Ford Bulbs for Magneto and Battery

Q.—Explain the difference in headlight bulbs operated from Ford magneto and those operated from battery. Kansas Reader.

The bulbs operated on the Ford magneto have only one filament and this filament is supposed to give the proper amount of light when operating on nine volts. Connecting the two lamps in series makes the light operate properly on 18 volts. In the bulbs designed to operate in connection with a storage battery the filament is so designed as to operate properly on 6.5 volts, and there are two filaments in each bulb, one to give dim lights and the other to give bright lights. In this case the two small filaments are in parallel when the switch is in the dim position and the two large filaments are in parallel when the switch is in the bright position.

WHERE A. C. FALLS DOWN IN IGNITION WORK

Q.—Can a bell ringing transformer which reduces 110 volts 60 cycle current to 6 or 8 volts be used to operate a make and break ignition and could a Ford coil be used with the same sort of transformer. Would also like to know if such a transformer can be used with a jump spark ignition. I have been told that A. C. will not do for make and break ignition. If so, I see no reason why it will not work for jump spark.—H. M. Daggett, Hollister, Calif.

There are two difficulties with your scheme. One is that the alternating current in changing from one direction of flow to the other has a zero value of current. It is accordingly possible that the make and break device will open just at the instant that the current is practically zero. This would mean that you would get no flash and the engine would miss. In the same way a jump spark type of ignition which uses a coil and interrupter might have the interrupter contacts open just as the current reversed.

Another difficulty is that with rapidly reversal of current, the value of the current may not be high enough to give good results; for the current in a coil builds up rather slowly. Operation of the Ford type coil is a possibility on alternating current because the points are pulled apart by magnetism and accordingly whenever they open a spark occurs. We rather suspect however, that the current capacity of the transformer would not be sufficient to properly operate a Ford coil. If you have a transformer and a Ford coil however, it is easy enough to try it and see what the results will be.

Trouble With Bill Fixit

EDITED BY A. H. PACKER



When Serial Numbers Do Not Help

Q—Supply wiring diagram for a Willys-Knight three-passenger roadster, model 20-A car No. 25421.—Erickson & Son Garage, 120 S. River Street, Eau Claire, Wis.

The serial number of a Willys Knight does not help much in identifying the car for the manufacturers do not give out information of this character. The model 20 however, was made in 1920 and 1921 and comparing both diagrams, we find them practically identical. We are showing the 1921 wiring which as nearly as we can determine is also correct for the 1920 car and we hope this will serve your purpose.

IGNITION TESTED WITH VOLTMETER

Q—When testing the wiring on a 490 Chevrolet, 1922 car with a voltmeter and connecting the meter from the interrupter terminal of the coil to ground, the hand of the meter will vibrate rapidly between 2 and 7 volts. If connected from the interrupter terminal to ground it will vibrate the same way. What is the cause of this action.—Charles Tuckfeld, North Branch, N. Y.

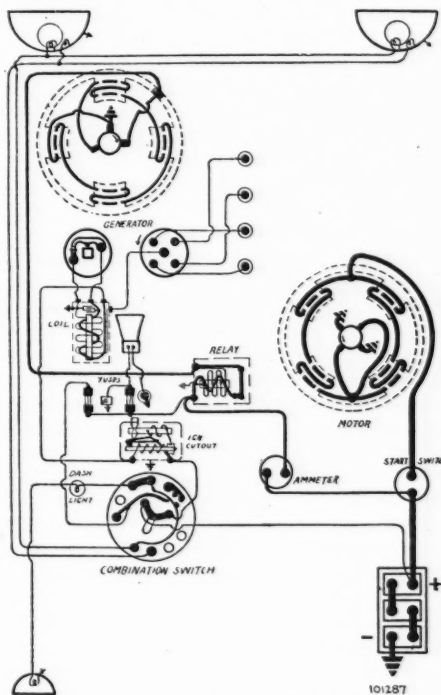
We assume that you made this test with the engine running, in which case the interrupter points were opening and closing. When the interrupter points are closed the interrupter terminal is grounded, due to the two points touching each other. The same thing is true of the interrupter terminal of the coil, for the closing of the interrupter points grounds this terminal. For this reason when you have the points closed you have no voltage across the meter and it tries to read zero.

On the other hand when the interrupter points are open you have one terminal of the voltmeter connected to ground and the other terminal connected through the winding of the coil, the switch and the ammeter, back to live battery so that it tries to read battery voltage. This is the wrong way to use the voltmeter, for with the needle vibrating you cannot get any satisfactory results. The voltmeter can be used for example to locate a shortened condenser. This is done with the engine standing and the interrupter points open. Then if you connect the meter in series with the interrupter and get a reading, it shows that the condenser is leaking.

TRICK WIRING FOR A SPOTLIGHT

Q—We wish to wire a spotlight on a 1923 Nash so it will burn when the dimmers are turned on and will be off when the lights are bright. We also want it to be off when the parking lights are on. How can this be done?—Ohio Tire Dealer.

On 1923 Nash cars, models 691 to 698 there are in effect three lights which can be used for driving. We have the bright headlights, also the same bulbs with a dimmer resistance in circuit and in addition to this, we have separate side lights.



Willys Knight 1921 Wiring

It is not clear to us whether you refer to the separate side lights as parking lights or whether you refer to a single light mounted on the left rear fender as a parking light. Referring to the original wiring, if you should connect the spotlight to the No. 5 terminal on the switch it would light up when the bright headlights are turned on and would be dimmed when the head lights are operated in the dim position.

This would be undesirable. If you connect the spotlight to the No. 6 terminal which is at the end of the dimming resistance, you would have the spot light dim when the head lights are bright and you would have the spot light bright when the head lights are dim. This would also not be very desirable. If you connect the spotlight to the No. 8 terminal which is a terminal used for the separate side lights, it would light up whenever the side lights are turned on. A connection of this sort is desirable when driving along a road at night and encountering a car driving in the opposite direction.

If the circuit is wired so that switching off the head lights and turning on the dim or side lights also sends current to the spotlight it makes a very simple motion and accomplishes the necessary change in the lighting. The spotlight can be trained on the ditch and automatically lights up when the side lights are turned on. If you refer to the side lights as the parking lights, then there is no satisfactory way of accomplishing what you have indicated.

Checking Advance With Spark Lever Movement

Q—I would like some information in regard to the Willys Knight model 66 six cylinder engine. With piston on top center how far should the spark control lever be moved from the full retard position in order to produce a spark. They have automatic as well as hand advance. I am working on these cars and am not satisfied with the way some of them perform, feeling that the spark may not be advanced enough.—F. A. Johnson, 521 Masten street, Buffalo, New York.

In the retard position of the lever it is usually considered desirable to have the spark occur when the piston is on top dead center. However, to make sure that the engine does not kick back it is usually customary to have the piston start down a slight amount, say from 1/64 to 1/32 inch, before the interrupter points begin to open. This corresponds to moving the lever a slight distance in the advance direction, while the piston stays on top dead center.

We are unable to state the exact amount of this movement, but it should be rather slight, say 1/10 of the total possible movement of the spark lever. If a great deal of movement is necessary it means that the spark is too much retarded and the movement of the advance lever will merely bring the spark back to dead center and will not advance it very much.

ONE BULB FOR FORDSON HEADLIGHT

Q.—Is the current output from the Fordson magneto any greater than from the magneto on the Ford car? Carlos Farria, Tilford, Ky.

We do not know of there being any difference. However, if the Fordson engine is run at fairly high speed most of the time the voltage generated may be higher on the average.

Q.—In using just one bulb on the Fordson tractor for a headlight, what kind should be used?

You might try a 24 volt bulb if you can get one, or you might try a 32 volt bulb, although this would probably require a special socket. You might find that the dimming coil as used on Ford trucks would work very well in series with your lights, using a 6, 9 or 12 volt light. As this is a special application you will have to do some experimenting, running the engine at slow speed at first to make sure that you do not burn out the bulb. As the voltage of the magneto varies with the speed it will be best to use the dimming coil, which, due to the fact that the Ford magneto gives out alternating current, compensates somewhat for changes in speed and will give a more constant light.



Motor Age's Flat Rate Forum

EDITED BY B. M. IKERT

Importance of Accurate Trouble Shooting

THE installation of a flat rate system means considerably more than merely establishing a flat price for any repair job.

It means more than the ability of quoting a customer a fixed price for maintenance work. It means someone in the shop, or whoever comes in contact with the customer, must be able to "shoot" the trouble, or intelligently ascertain the needs of the customer's car.

Flat rate is no excuse for poor trouble shooting. If a customer has been sold a job or series of jobs on a flat rate basis and still his engine or car is no better off than formerly, then, the flat rate has accomplished very little.

A Case on Record

There is a case on record where a customer drove his car to a garage stating the engine was slow on accelerating and often stopped completely when throttled down.

This particular garage did not operate on the flat rate basis, but this was no excuse to go ahead and suggest all sorts of remedies for the trouble in question. Everything from grinding valves to installing a new distributor was suggested. The fuel lines were blown out and a new set of plugs installed.

Still, after the customer had paid plenty of money at this garage, his

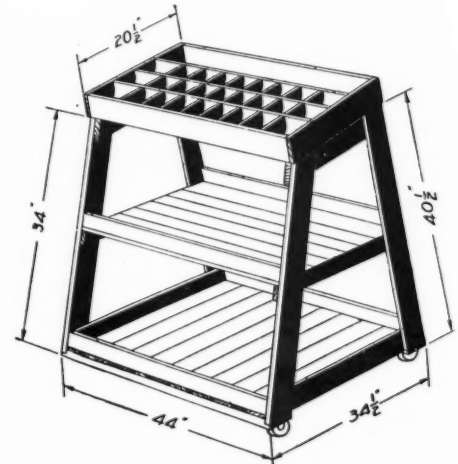
trouble still manifested itself. He tried another place and was told the fuel line was clogged. This shop again blew out the line, advanced the ignition and did a few other things. Yet, the trouble was not completely remedied. Some of the mechanics stated it was one of those "mysterious" troubles hard to find.

Finally the customer took the car to the dealer's service station. A grudge against the dealer's place of business had stalled off the visit but in the belief that the dealer's men knew what ought to be done he finally went to them.

And there he found a man who could shoot trouble and knew the peculiarities of the engine and car. After the customer had explained the engine action, the trouble shooter instructed one of the men to remove part of the carbureter and polish the cylinder attached to the metering pin.

The parts were reinstalled and when the customer took the car out acceleration was improved as well as the general running. The trouble shooter knew his stuff, and the customer was only too glad to pay the slight charge for the work.

Maintenance is something which ought to be merchandised the same as any commodity and often a customer can be sold more operations than he calls for. It may be of benefit to him to call his



THINGS THAT HELP FLAT RATE

When parts are taken off an engine or car much time is saved by having some sort of stand or rack in which such parts can be placed. Such stands can be bought or made. Here is one sponsored by the Franklin company to be used in connection with its standardized system of selling maintenance

attention to a much needed repair and a shop is justified in doing so.

But the big thing is to be sure to sell the customer at a flat price the thing he needs, which intelligent shooting makes possible.

School Uses Flat Rate Manual

New Britain, Conn.

To the Editor of MOTOR AGE:

Enclosed please find fifty cents for your Flat Rate Manual.

I use the flat rate very successfully in the automobile department of this school as all of the repair work is on outside cars.

A Buick Branch Gets 50 Charts

Indianapolis, Ind.

To the Editor of MOTOR AGE:

We would like to get fifty copies of your Flat Rate sheet that came out in the Oct. 23 issue. If this is possible please mail these to us at once.—Buick Motor Co., E. S. King, Supt.

Forum Prices

The charges listed for the various operations on the Star model F in the table on this page represent the total charge to the customer. They include material as well as labor and, as will be noted, the necessary material is listed under each operation where material or parts are needed.

MOTOR AGE'S FLAT RATE FORUM

No. 19

STAR MODEL F FLAT RATES FOR VALVE MECHANISM OPERATIONS

Manufacturer's
Official
Designation

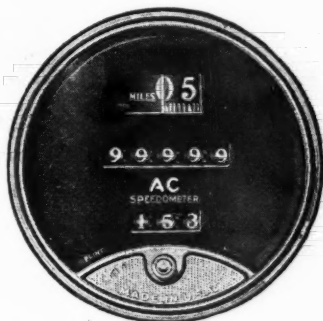
	Charge
1110-F Reseat and grind valves.....	\$4.10
Material required: 2 valves, 1 valve spring, 2 valve stem keys, 2 valve cover gaskets.	
1110-G Valve stem guide—replace.....	.75
Material required: 1 valve stem guide.	
1110-H Piston ring (three to one piston)—replace.....	1.50
Material required: 3 piston rings (three to one piston).	
1110-I Crankshaft sprocket—replace.....	2.00
Material required: 1 crankshaft sprocket.	
1110-J Camshaft—replace.....	9.50
Material required: 1 camshaft.	
1110-K Camshaft sprocket—replace.....	2.90
Material required: 1 camshaft sprocket.	
1110-L Generator drive sprocket—replace.....	1.80
Material required: 1 generator drive sprocket, 1 generator nut.	
1110-M Valve lifter guide (one)—replace.....	1.80
Material required: 1 valve lifter guide.	
1110-N Valve lifter (one)—replace.....	1.05
Material required: 1 valve lifter.	
1110-O Valve lifter adjusting screw and nut—replace.....	.30
Material required: 1 valve lifter adjusting screw, 1 valve lifter adjusting screw nut.	
1110-P Valve lifter guide plug—replace.....	.15
Material required: 1 valve lifter guide plug, 1 valve lifter guide spring.	
1110-Q Timing drive chain—replace.....	7.85
Material required: 1 timing drive chain.	

THE MARKET'S NEW OFFERINGS

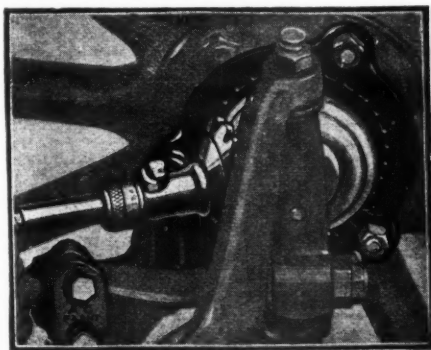
Accessories—Equipment—Supplies

AC Speedometer for Fords

ASPEEDOMETER outfit which requires no swivel in the drive and designed for Ford cars and trucks is being manufactured by the A. C. Spark Plug Company, Flint, Mich. The speedometer head with its round nickeled dial is installed in the dash in a manner to make it appear as a part of the car rather than an "extra." It provides a 100-mile trip register, with tenths and a 100,000 mile total register. Miles per hour from



A. C. speedometer head



A. C. Direct Drive

one mile to 75 can be shown and it is said the instrument registers accurately even on rough roads.

The drive can be attached without drilling holes in hub flanges or spokes. Three of the regular flange bolts hold the driving gear which is connected to the flexible shaft by a coupling that eliminates the need for a swivel.



Radio Tube Rejuvenator

Accessories and Necessities

In the opinion of an enterprising equipment dealer in California it is easier to sell an owner of an old car "necessities" than "accessories."

He has come to the conclusion that the word "necessities" has a better psychological effect than "accessories" especially in the case of the old car owner. While he uses both words in circularizing owners of comparatively new cars the word "necessities" is kept emphatically to the front in circularizing old car owners.

Thus he stresses the need of buying certain additional equipments even though the old car owner might have a notion that he does not want to merely "doll up" his vehicle.

Trampe Spark Plug

ANEW spark plug, called the Trampe, has been put on the market by the Trampe Spark Plug Co. of St. Louis. The plug carries a guarantee against fouling. Actuation of a special power disc made of Monel metal is said to eliminate wastage of gasoline and prevent it from getting into the crankcase and diluting the oil therein. The patented disc is said also to take the full force of the pounding due to explosions, insuring constant performance and prevention of injury to insulators and contact points. The plug is made for all cars and retails for \$1 for Fords and \$1.25 for other makes.

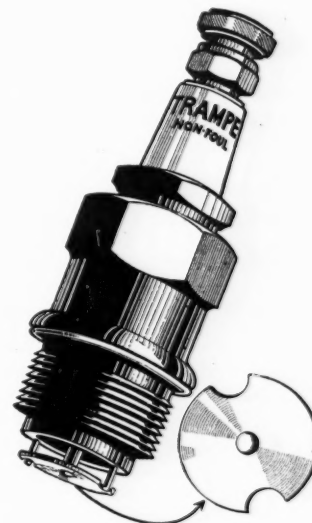
Radio Tube Rejuvenator

ATRANSFORMER device operating on alternating current is announced by the Jefferson Electric Manufacturing Company of Chicago. This device is specifically designed to restore the operating characteristics of radio tubes. It is also stated that summer reception is very much improved when tubes which have been used all winter are subjected to the rejuvenation process. The retail price is \$7.50.

Biflex Superb Bumper

(Cut shown above)

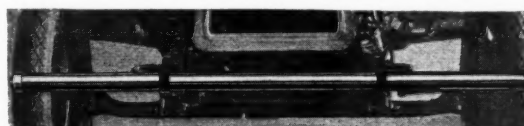
AMARKED departure from the regular Biflex Standard Bumper is found in the new Biflex Superb Bumper which is being produced by the Biflex Corporation, Waukegan, Ill. The Superb model is said by the manufacturers to have ultra-cushioning strength, possessing powerful resiliency. Very attractive in appearance, it is proving an extremely popular item on the Biflex list.



Trampe Spark Plug

Tubular Bumpers for Chevrolet

TUBULAR bar bumpers for 1925 Chevrolet cars have been put on the market by the Churchville Manufacturing & Laboratories Co., 246 N. 17th St., Philadelphia. Fittings for the device are universal, the same bumper being adaptable to use in front and rear. The bumper lists at \$15, including fittings. Brackets are japanned and baked and the nickel rail is of the five-year guaranteed rust-proof type.



Tubular Bumper for Chevrolet

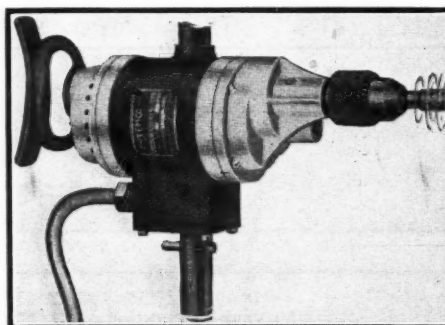
GETTING MORE OUT of the SHOP

A Super Motored Drill for the Garage Man

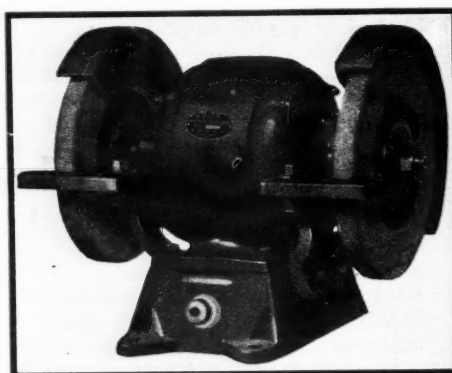
One of the most common repair jobs today is that of cylinder honing, for which there are a number of tools on the market. In the operation of these tools considerable power is required to do the job properly.

Realizing the importance of this work, and also to provide a tool that would meet all requirements, the Temco Electric Motor Co., Leipsic, Ohio, has just brought out a new super-motored half inch garage drill.

In appearance it is typical of all other Temco electrical drills, but the motor in this drill is more powerful. Like all other Temco drills, it is Temco-built throughout, except the chuck and cord. The motor is fan-cooled and mounted on ball bearings thrust being taken by a ball thrust bearing. The price of the new model G-D half-inch Temco drill is \$56.



Temco drill



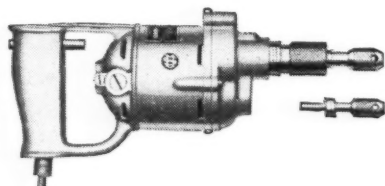
Azor bench grinder

Azor Bench Grinder

The Azor Motor Mfg. Co., 7424 Bessemer avenue, Cleveland, Ohio, have announced a 110-volt bench grinder, selling for \$32, for use with either direct or alternating current. It is equipped with two $\frac{3}{4}$ x 8 in. grinding wheels and shaft is threaded for 2-B Jacobs chuck. Specifications are: $\frac{1}{3}$ hp., 1,800 r.p.m., length 13½ in., height 11 in., weight 55 lbs. It is equipped with 10-ft cord and plug.

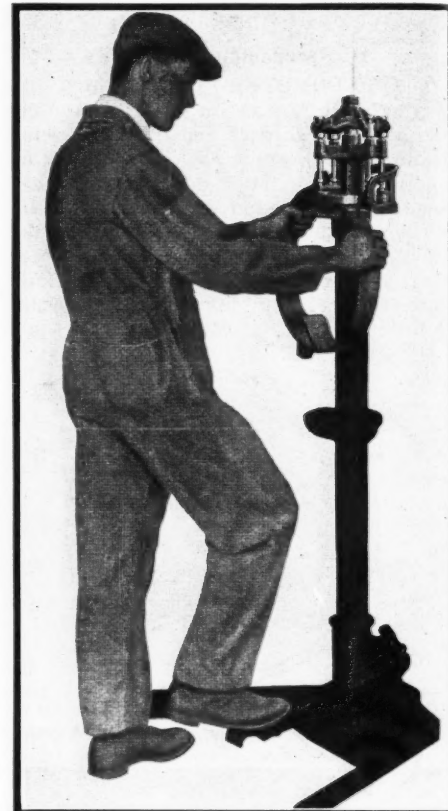
Electric Screw Driver and Nut Setter

This is an electrical tool designed to speed up the work of driving screws, lag bolts and setting nuts. It runs on 110 or 220 volts, alternating current or direct current; is equipped with positive clutch, normally held in "open" position and engaged by pressure on tool and released when pressure is released. It has SKF ball bearings and bits are equipped with "slot finder." It is made in four sizes, No. 1 size taking wood screws up to and



U. S. electric screw driver and nut setter

including No. 10x1½ in., lag screws 3/16x 3 in., and nuts and cap screws up to ¼ in. No. 4 size takes wood screws larger than No. 20 by 4 in., lag screws up to ½x5½ in. and nuts and cap screws up to ¾ in. Sizes Nos. 2 and 3 take intermediate sizes or screws, lags and nuts. The prices are, No. 1, \$48; No. 2, \$68; No. 3, \$80, and No. 4, \$105. It is made by the United States Electrical Tool Co., Cincinnati, Ohio.



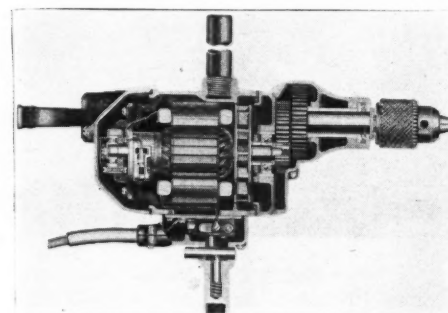
Weaver brake service machine model H

Brake Service Machine

A new brake service machine for relining various types of brake bands, brake shoes, disc clutches and Ford transmission bands, has just been put out by Weaver Manufacturing Co., Springfield, Ill. Mounted at a height convenient for the operator, a revolving turret carrying plungers to take care of punching and countersinking various diameters of rivets, is operated by a toggle action controlled by a long leverage foot pedal. The turret is rotated by hand to bring either of the four plungers in line with the riveting work. Each plunger can be screwed up or down so as to countersink rivets to the desired depth and take care of variations in thicknesses of bands and linings. Special attachments are included so as to make only two operations necessary to remove old lining and rivet on new for Ford bands. Price \$70.00.

Hisey Half-Inch Universal Drill

The Hisey-Wolf Machine Co., Cincinnati, Ohio, has placed on the market a new half-inch universal drill equipped with a standard Hisey motor. The chuck of this drill is fitted to hardened and ground tapered spindle and is of Jacobs make. An oversize chuck spindle is used and is automatically lubricated through the gear case. A cooling fan is accurately finished to insure balance and is a slip fit over the shaft and held in place by a key. The cool incoming air passes over the commutator and motor and vents in-



Hisey half-inch universal drill

sure maximum protection against accidental abuse.

The brush holders with adjustable spring tension are mounted as a separate unit on a bakelite yoke which makes for good installation. The end cover is a rugged casting carrying all pressure applied to the spade type handle and being independent of the motor and motor bearing relieves them of all strain. The spade handle is directly in line with the drill chuck thus eliminating side pressure and for close quarter work it can be removed and pressure applied directly on the end cover casing. The side handle is removable. The speed of the drill with no load is 525 r.p.m. and the net weight is 17 lbs. Standard equipment besides the half-inch chuck includes 10 feet of all rubber Tirez cable and suitable attaching plug. The price of the drill is \$58.

EDITORIAL

Routings That Save Money

DECREASING the cost of traveling by motor through increased efficiency in routing is to be an outstanding development of the accomplishments this year of the American Automobile Association, according to Thomas P. Henry, president of that organization. Thanks to the continued extension of the nation's paved highway mileage the A. A. A. should be able steadily to improve its routing service. The character of roads over which the motorist is to travel will figure largely in the cost of operation. Efficient routing also often cuts down distance. This is a work which the A. A. A. is excellently prepared to carry on and any progress it makes is in the direction of the automotive trade's great ambition to see automobile transportation brought down to the lowest possible operation cost. Lower the cost of highway travel and more highway travel will result.

The Last Half of the Year

IN its monthly discussion of current market conditions the National Bank of Commerce, of New York, predicts better general business in the last half of the year than was noted in the first half—providing "crop yields are reasonably good and farm prices profitable."

The bank declares that "profitwise, the business outlook is the best since 1919, because it is the most stable."

One big factor in the process of stabilization has been the automotive industry. Contributing to improved conditions one of the chief forces has been the general effort to American manufacturers to measure output closely to the requirements of consumers.

No other industry has striven harder to accomplish this adjustment than have the makers of motor vehicles. In fact, automobile manufacturers must be given due credit for their leadership in this constructive movement. And they are entitled to the profits of their wisdom.

It is reasonable to expect that the last half of the year will be a substantial period for the automotive trade. The seasonal decline is on but the downward curve is apparently more gradual than ordinarily and demand is keeping some of the factories at capacity operation.

The farmer has been an important figure in the progress we have made thus far and as the New York bank has indicated the farmer's prosperity will have a significant bearing upon balances of the last six months. At this time the farmer's outlook seems sufficiently secure. Barring unlikely misfortune our agricultural industry should come through in good shape.

There should be no let-down by the automobile dealer

in intensified merchandising effort. Many motor vehicles will be sold between now and the last day of December, a big volume of accessories and supplies will be marketed and much maintenance work will be required.

While we are not prepared to say that the last half of the year will be a record period it can be safely ventured that it will be better than the corresponding period of last year from the standpoint of profits and opportunity. Prospects are unusually good.

Studebaker and Used Cars

STUDEBAKER has announced plans for a broadside at the used car problem. It is a relief to see factories take hold of this matter. Studebaker offers to stand behind the dealer in guaranteeing correct representation of used cars offered for sale by the retailing organization. The pledge which the dealer is required to sign and post conspicuously in his place of business is an impressive document. In its assurance of honesty it sets forth an essential that the trade at large must emphasize and live up to if the used car problem is to be solved. Honest representations must be found in all merchandising enterprise that hopes to endure and prosper. The honest merchant, however, who fails to let the public know of his honest policies is overlooking opportunity. Most certainly he is guilty of this if he is a used car merchant.

An All-Time School

THE young man who thinks that his school days are over when he receives a college diploma is certain to bump into disillusionment when he invades the field of automobile selling for a livelihood. While his college training is a fine asset he will find that those who keep up with the automobile selling procession are never "out of school." To keep up there is a demand for constant study which has been increasing in proportion to the intensification of competition.

Factories are coming more and more to the realization that education of the field after all is the big thing in automobile merchandising. Requirements by factories for dealers and salesmen to study are yearly becoming more pressing. Factory budgets for educational campaigning in the trade have become very large. A double-jointed chin and a rubber tongue might have been considered the only necessary selling requisites at one time—but not so today. Merchants and salesmen today must THINK—they must ANALYZE—they must STUDY.

July Automotive Outlook Is Favorable

Seasonal Decline in June Is Less Than in Former Years

Several Large Producers Still Behind in Meeting Orders—Exports Set Records

NEW YORK, July 1—Good automotive business was experienced up to the end of June, and the outlook for July is favorable. There was a slight seasonal decline in sales during the month just past, but the drop was less than in former years and far less than was expected late in May.

Several large producers in various price classes are still behind in meeting orders—a highly unusual situation for this time of year. Others have caught up, however, and are slowing down in production. The lower activity is particularly noted in these factories that are preparing to introduce new models.

Three or four new cars have been introduced recently and their reception from the public has been most cordial, a particularly striking example of the keen interest in automobiles that buyers everywhere are evidencing.

Why unsatisfactory sales conditions are reported, local influences are found to be the causes, such as the coal situation in sections of Pennsylvania and the poor state of crops in the southwest.

Truck sales and production are running well ahead of last year at this time. With the opening of the tourist season the automotive supplies market has experienced a quickening in almost all lines. The tire market has shown particular strength. Replacement parts and shop equipment continue to show a slight gain in almost all sections of the country.

Exports are setting records and it begins to look as if the total for the year may reach the half million mark, against 385,000 last year, which marked the peak of foreign sales for all time.

A healthier condition among car distributors and dealers is one of the notable achievements of the year in automotive lines. This is particularly noted in used car stocks, which in most sections of the country are low. Used cars moved in satisfactory volume throughout the month and new car stocks are also in good shape.

Revenue Collections From Automotive Industry Less

WASHINGTON, June 27.—A decrease of \$3,296,465.90 is noted here by the Bureau of Internal Revenue in the May, 1925, internal revenue collections from the automobile industry as compared with

All Business Aided by Advance of Car Industry in Lansing

LANSING, June 27.—Through the growth of Lansing's automobile and general accessory business in the last 20 years, the value of Lansing's manufactured products has increased 116.4 per cent.

Capitol used in the manufacture of the products showed an annual average increase of 46.6 per cent and the number of employes gained 12.1 per cent. Business firms increased at the rate of 17 per cent annually, banking resources at the rate of 36.5 per cent and bank clearings at 38 per cent.

Population increased 12.9 per cent annually; families 12.5 per cent; homes 14.1 per cent; value of personal property 28.1 per cent, building and loan assets 26.5 per cent, and per capita wealth 48.9 per cent.

the collections in May, 1924. The total collections for the month just passed is given at \$12,357,156.33 as contrasted with a total of \$15,653,622.23 for May, 1924.

A substantial decrease is also shown in the collections from the automobile industry for the period from July 1, 1924, to May 31, 1925, which were \$109,943,871.61 or \$36,125,708.95 less than for the period July 1, 1923, to May 31, 1924, when the total was \$146,069,580.56.

The segregated taxes collected from the automobile industry for May, 1925, as compared with May 1924, follows: In May, 1925, from automobile trucks and automobile wagons, \$688,046.51 as compared with \$1,098,427.70 in May, 1924; other automobile and motorcycles in May, 1925, \$10,027,796.17 as compared with \$11,539,012.29 for May, 1924, and automobile parts and accessories, \$1,641,313.66 in May, 1925, as compared with \$3,016,182.24 in May, 1924.

FORD PLANS MEXICO PLANT

MEXICO CITY, June 27.—The Ford Motor Co. plans to take over certain warehouses now under construction on the outskirts of Mexico City and use them as an assembly plant. These warehouses are modern and constructed in accordance with specific requirements so that the company will be able to assemble knocked-down cars received from the United States and to carry a moderate stock of cars, trucks, Fordson tractors and Lincoln cars as well as parts. Whether the plant will be operated as a branch or as a Mexican corporation has not been decided. Occupancy is expected early in July.

Hertz Refuses to Deny or Confirm Merger Reports

Financial Men Believe Yellow Manufacturing Will Unite With General Motors

CHICAGO, June 29—John Hertz, president of the Yellow Manufacturing Co. and associated interests, and Edward D'Ancona, secretary and general counsel of the concern, have steadfastly refused to either confirm or deny reports that a \$60,000,000 merger of the Yellow interests with General Motors Corporation is pending.

Meetings were held simultaneously in Detroit and Chicago last week, and although no official announcement has been made regarding the sessions, it is persistently reported in La Salle Street that the purpose of the meetings was to effect a consolidation of the two corporations.

Financiers and financial authorities appear to be entirely satisfied that such negotiations are going forward and that they probably are nearing completion because of the fact that no denial has been issued from either the Yellow Manufacturing or General Motors headquarters.

The center of conjecture seems to be in what manner control of the Yellow interests will pass to General Motors. Many quarters credit Mr. Hertz with controlling not more than 30 per cent of the stock of the Chicago company of which he is president. This would make it impossible for him to deliver entire control. It is believed that General Motors is planning an exchange of stock as an alternative.

In its financial statement of May 31, General Motors had 5,161,800 shares of common outstanding and 10,000,000 shares authorized. The same is true of the debenture and two preferred stocks. In other words a large part of the authorized total is available for expansion. Besides this, General Motors has on hand about \$140,000,000, far more than is needed for protection in its own field.

This statement shows that it is in excellent condition to consummate such a deal as is reported without any financing. Should such a deal be arranged, General Motors would be in an enviable position in the automobile field as Yellow Manufacturing is pre-eminent in the building of motorbuses and taxicabs.

Should General Motors acquire control of Yellow Manufacturing, the corporation will be closely allied with the Yellow Cab Company of New York, the Chicago Yellow Cab Company, the Omnibus Corporation and the Yellow-Drite-It-Yourself System, which are the most important Manufacturing outlets for the production of the Yellow Manufacturing Company.

Chrysler Corp. Buys Business And Properties of Maxwell

Transfer Plan of April 15 Adopted At Meeting of Stockholders in Detroit

DETROIT, June 27.—The Chrysler Corp. has acquired today all the business and properties of the Maxwell Motor Corp. The sale, pursuant to the plan of April 15, was authorized at a meeting of the Maxwell stockholders held here.

Incorporation papers for the new Chrysler Corp., were filed in Delaware, June 6. This corporation takes the place of the Chrysler Corp. formed in Michigan with nominal capital to conform with legal matters necessary in connection with carrying out the transfer plan.

Under the transfer plan 239,373 shares of Chrysler Corp., preferred will be issued to Maxwell stockholders on the basis of 100 shares of preferred and 10 shares of Chrysler common stock for each 100 shares of Maxwell Class A stock, and 100 shares of Maxwell common for each 100 shares of Maxwell Class B stock.

The new corporation will have an authorized capitalization consisting of 275,000 shares of \$8 cumulative preferred stock and 800,000 of common, all no par value.

Walter P. Chrysler stated that the new company was beginning its career under the most auspicious circumstances. The new four cylinder Chrysler car, now being introduced has met with complete approval of the dealer and distributor organization. The company, he continued, has orders on its books assuring capacity production for the next three months on both the four and six cylinder models. He said that the company was never in a stronger position with respect to forward orders, organization facilities and cash.

19,000 Used Cars Sold in Boston in Last Six Months

BOSTON, June 27.—Nearly 19,000 used cars were sold in Boston during the six months period beginning December 1 last and ending May 31 of this year. Figures compiled by the Boston Police Department give the details to show that while the dealers took in 15,040 machines during the winter and spring they sold 13,340. That left a margin of some 1,700 used cars on the hands of the dealers. However, when it is considered that there were 194 such dealers licensed in Boston the average would be less than 9 cars to each on a pro rata basis.

That the used car sales this spring were good is further emphasized by the record of sales made by individuals. In many cases the dealers advised seekers after new cars to try to sell their old cars to others, and that they were successful is recorded in the books where it shows permits were granted to 5,578. Therefore, when this individual number is added to the 13,340 sold by the dealers it totals 18,918.

"Co-operative" Brake Tests Planned

SYRACUSE, June 27.—Syracuse automobile dealers cooperating with state, county and city officials will conduct the first automobile brake testing campaign ever held in this city.

The State Motor Vehicle Bureau, the city police, deputy sheriffs, Syracuse Safety Council and the Automobile Club of Syracuse will be organizations which will co-operate with the dealers.

An attempt to hold a campaign last year failed because the right of officials to stop automobiles was questioned. This year drivers will be invited to have their brakes tested on specially designated streets in the city in charge of officers. Testing will be without charge and there will be no compulsion on the part of the driver.

These figures are solely for the city of Boston and are correct because motor cars are not registered without a waiver or permit from the Boston Police Department. Furthermore, a comparison is given with the same period of a year ago. This year shows an increase for the previous year had 12,698 cars taken in trade and 11,175 sold leaving the dealers with 1,523 on hand or a difference of 177 less than this year. In the same period the individual sales ran up to 5,023 so that it made the total 16,198.

Sales of New Cars Slow Appreciably in St. Louis

ST. LOUIS, Mo., June 27.—Sales of new cars in the city have slowed down. Especially is it noticeable that those lines which are in the habit of bringing out new models about the first of July or the first of August have not been selling so well lately. Also one popular line which has not been in the habit of putting out yearly models has been enjoying a great popularity.

In fact the month of May was one of the best if not the best month the distributor of this line in St. Louis has ever had.

Dealers are determined to keep their used car stocks down. With this end in view they have taken them in trade sparingly and with due diligence. The result is that used car stocks on hand at this time are low, 25 per cent below normal it is said in some quarters. Some dealers say they could sell a good many more cars if they were willing to allow large figures for used cars, but this they refused to do.

Accessory sales are spotty. It is said by some firms that their business is 20 per cent ahead of last year while others claim that sales are very poor.

Collections are good.

May Output of Motor Cars Exceeds That of Last Year

Both Passenger Automobiles and Trucks, However, Are Below April Figures

WASHINGTON, June 27.—The May output of motor vehicles in the United States and Canada, according to the Department of Commerce, was 382,714 passenger cars and 43,303 trucks. The May, 1924, total was 286,324 passenger cars and 35,314 trucks while April of this year showed 391,302 passenger cars and 47,815 trucks.

Figures in the United States alone show 364,363 cars and 41,415 trucks as compared with 375,787 cars and 46,239 trucks for the preceding month.

Production for last year and the first five months of this year, according to the figures gathered by the department are listed below. The table is based on data received from 185 manufacturers from recent production statements as furnished to them. The May figures from 14 small firms were not received in time to be included in this report.

	Cars	Trucks	Total
1924			
January	293,824	30,741	324,565
February	343,460	32,910	376,370
March	357,045	36,444	393,489
April	346,405	37,948	384,353
May	286,324	35,314	321,638
Total	1,627,058	173,357	1,800,415
1925			
June	225,079	29,067	254,146
July	244,544	26,391	270,935
August	255,232	28,647	283,879
September	263,528	31,960	295,488
October	260,881	32,475	293,356
November	204,343	27,905	232,248
December	182,099	27,542	209,641
Total	3,262,764	377,344	3,640,108
1925			
January	212,921	28,147	241,068
February	252,803	34,412	287,215
March	332,151	45,096	377,247
April	391,302	47,815	439,117
May	382,714	43,303	426,017
Total	1,571,891	198,773	1,770,664

June Is Biggest Month in History of Hudson-Essex

DETROIT, June 27.—Hudson-Essex sales which will be between 26,000 and 27,000 for June will break all previous records and will be the best month in the history of the company, according to word given out at the factory today. The present sales and orders on hand will exceed those for May by about 2500.

Ninety per cent of the orders are for enclosed cars, with the demand being even throughout the entire country. The sales of both cars are running about even. The new Hudson brougham has met with a countrywide reception, factory officials said that will insure this model meeting with good demand for some time.

Plans now under way at the factory call for the output being increased from 1200 Hudson-Essex cars, the daily output now, to 2000 by the end of the month. Despite the increased demand, no unusual delay has been experienced in meeting deliveries. With the increased output it is hoped to make deliveries within an unusually short time.

Accessories Moving Steadily With July Prospects Good

May Sales Slightly Under April But
Not So Much As
Formerly

NEW YORK, June 27.—The automotive parts and accessory industry is proceeding at a strong and steady pace as the mid-summer season approaches. May business showed a less than normal seasonal decline from the April peak and July prospects are good. It is also indicated that business for the last half of the year will exceed the final six months of 1924 and that net profits of 1925 will be better than they were last year.

These statements are contained in the Business Bulletin for June just issued to members by the Motor and Accessory Manufacturers' Association. The association's survey of members' sales gives an aggregate index figure for May of 165 as compared with 168 for April, with business of January, 1925, furnishing the index of 100.

Sales of parts and accessories to car and truck manufacturers for original equipment dropped slightly from April to May, as did sales of accessories and maintenance equipment to the trade. Sales to the trade of replacement parts made a striking gain from an index figure of 107 for April to 134 for May.

Aggregate sales of original equipment on which the May index figure was based exceeded \$12,000,000. Replacement parts sales included in the compilation aggregated nearly \$3,000,000, accessory sales nearly \$2,000,000 and service equipment sales slightly less than \$500,000.

Indiana Registrations Off 5 Per Cent During May

CHICAGO, June 27.—Registration of new passenger cars in Indiana during May dropped 5 per cent, as compared with the preceding month, the total being 10,612 as against 11,178 for April. All price classes declined, but the decreases were small, with the exception of the high-priced vehicles which were 27 per cent under the April figures.

The following table indicates the changes for May as compared with April:

	Loss
Fords	3%
Low, excl. Fords.....	3%
Medium	6%
High	27%
Total	5%

Following are the detailed figures for the first five months of 1925:

	Low, excl.				
Mo.	Fords	Fords	Med.	High*	Total
Jan.	4,239	1,024	1,837	117	7,217
Feb.	3,515	896	1,533	103	6,047
March ..	5,778	2,042	4,031	205	12,056
April ...	5,002	2,292	3,641	243	11,178
May	4,819	2,205	3,413	175	10,612
Total ..	23,353	8,459	14,455	943	47,110

*Includes miscellaneous cars not named.

The foregoing statistics were compiled from figures furnished to MOTOR AGE by Indianapolis Auto Trade Association, Indianapolis, Ind.

Savings Rise With Car Output

BALTIMORE, June 27.—A. E. Duncan, chairman of the board of the Commercial Credit Company of this city and affiliated companies throughout the United States, has issued figures to show that the savings of the company have not been distributed by the great increase in the number of automobiles.

According to Mr. Duncan, the number of registered motor vehicles increased from 2,445,666 in 1915 to 17,591,981 in 1924. During the same time, the number of savings depositors increased from 16,084,587 with savings deposits of \$8,791,253,000 or \$88 per capita to 38,867,991 depositors with savings deposits of \$20,873,562,000 or \$186 per capita in 1924.

Diana Deliveries Are Heavy In Chicago Trade Territory

CHICAGO, June 27.—Fifty-two deliveries have been made by the Quinlan Motors Co., distributors of the new Diana Eight, product of Moon Motor Car Co., in the Chicago territory since the first of the new models arrived here three weeks ago.

About 40 of the cars have been sold in Cook County, the other twelve going to dealers in Milwaukee, western Michigan towns and one or two in other cities of northern Illinois. This week was the first in which advertising of the new Diana has been carried out and with the beginning of an active advertising campaign sales are expected to jump appreciably.

Deliveries at present are practically immediate with the exception of the roadsters. The de luxe sedan is the model which is going best at this time.

WILLS ST. CLAIRE DEALERS

MARYSVILLE, MICH., June 27.—Distributors who have taken on the Wills Sainte Claire line are as follows: A. Lopez Ulloa, San Salvador, Central America; M. L. McCorkle, Eldorado, Arkansas. New dealers include the Nassau Boulevard Garage, Garden City, L. I., N. Y.; Wills Sainte Claire Sales Co., Hartford, Conn.; D. D. Provan, West Haverstraw, N. Y.; Barton Motor Company, Clarendon, Virginia; New Castle Auto Sales, New Castle, Pa.; F. H. Niece, Grove City, Pa.

TRUCK FEES DOUBLED

BOSTON, June 27.—Motor truck dealers have just received the copies of the new law passed governing fees for commercial vehicles beginning with 1926. The minimum has been jumped from \$10 to \$20. The law provides that all vehicles used in carrying freight, good and merchandise shall pay 50 cents per hundred pounds, which includes both the vehicle and its maximum carrying capacity. The present law provided for a flat rate of \$10 per ton. Under the new law the five ton trucks with their chassis and bodies weighing about as much as the carrying capacity will pay about \$100. This is an increase of 100 per cent.

Boston Sales for June Show Steadier Tendency Than May

Used Car Demand Advances, Dealers
Selling More Than They
Take In

BOSTON, June 27.—Motor car sales in Boston for the past few weeks, or since about June 1, have shown a steadier tendency than during May. There has been evidence of a letup but for only a few days instead of for a week or 10 days at a time. Distributors say that the retail sales in Boston have been good, but the dealers in the outside territory do not seem to be doing quite as well as they expected.

Used car sales have been going good, for the report turned into the police showed that during May the dealers sold 135 more of these cars than they took in, and with the scale of individual sales rising each month it meant a better movement for new cars.

Motor car distributors do not look for any seasonable slump of great proportions this summer. Announcement of one big company that it is no longer committed to yearly models will relieve buyers from waiting to learn what that company is going to do in August, as usual. There is no feeling that because summer is here the thing to think of is vacations.

With the registrations to June running 64,265 more than for the corresponding period in 1924 for Massachusetts; and the May listings alone for the state reaching 45,963 or 1,455 above May, 1924, it has given the dealers encouragement to keep plugging along.

PAIGE-DETROIT EARNINGS

DETROIT, June 27.—Paige-Detroit Motor Car Co. net earnings for May were \$598,000, exclusive of earnings by branches and subsidiaries, which in April amounted to 16 per cent of the \$522,000 net before taxes. Assuming the same ratio for branch earnings in May, total net for that month would be \$712,000, or about 97 cents a share on the common after allowing for taxes, interest and preferred dividends. Exclusive of branches and subsidiaries, net earnings for the first five months of 1925 were \$1,754,880, or \$2,089,100 with the estimated 16 per cent covering branch earnings, amounting to \$2.88 a share for the 615,000 shares of common.

EXTRA DIVIDEND

DETROIT, June 27.—An extra dividend of 20 cents a share, payable July 15 to common stockholders of record at the close of business July 7, 1925, has been declared by the board of directors of the C. G. Spring and Bumper Co. The corporation's new plant in Chicago is completed and in full operation. It has a capacity of 4,000 complete automobile bumpers daily. With this output combined with that of the Detroit factory it has been possible to secure greater production and increased earnings.

Passenger Automobile Sales Gaining Slowly in Oregon

Industry Believed to Be Forging Ahead in State With Outlook Promising

PORTLAND, Ore., June 27.—Passenger car sales in Oregon are gaining slowly. That is the most that can be said for the month. May sales increased 63 cars over the previous month, Multnomah County, which includes the city of Portland, gaining 32.

However, in view of general business conditions, even this slight increase is looked upon as an indication that the automotive industry is looking up in this state. Healthy indications are seen in a perusal of figures for Multnomah County for April and May. In April sales were 592 less than sales in April, 1924, while in May the loss was but 342 under May of last year. The percentage of loss in sales for 1925 as compared with 1924 is about the same for Multnomah County as for the rest of the state—about 24 per cent.

This loss applies to new car sales only, and considering the fact that dealers are allowing less on "trade ins" than they did last year, the profits may equal those of 1924 even though the volume be decidedly less. Some Portland dealers have reported that their used car stock is less than half their figures of 1924.

While truck sales for May were three less than during the same month last year, yet 215 trucks were sold in the state as against 192 in April. The number of trucks sold this year still lacks 58 of attaining last year's figure.

If applications for licenses continue to be filed this month and next as in April and May, Oregon will have more registered motor vehicles by August 1 than during the entire year of 1924.

Philadelphia Rubber Will Double Reclaimed Output

AKRON, O., June 27.—John K. Mitchell, president of the Philadelphia Rubber Works Co., has just announced plans for increasing the production of reclaimed rubber in the company's plants to 10,000,000 pounds a month, compared with present output of around 5,000,000 pounds.

The expansion program includes the construction of two new factories, one in the East, probably Philadelphia, and the other in a locality not yet decided upon, and enlargement of the Akron plant.

NEW CLEVELAND DEALERS

CLEVELAND, O., June 27.—New appointments of dealers by the Cleveland Automobile Company are announced as follows:

Modern Service Auto Co., Ottumwa, Ia.; W. J. Price, Portsmouth, Va., and Alton Cleveland Sales Co., Alton, Ill.

A. A. A. Standings

FRANKLIN, Pa., June 27.—Following are the standings of race drivers announced officially by the American Automobile Association, as of June 15.

1.	DePaolo	2000
2.	Milton	1030
3.	Hartz	640
4.	Cooper	555
5.	Lewis	465
6.	Elliot	270
7.	Shafer	240
8.	McDonogh	145
9.	Duray	135
10.	Comer	124
11.	Kreis	112
12.	Batten	110
13.	Bordino	54
14.	Bennett Hill	50
15.	DePalma	40
16.	Shattuck	35
17.	Devore	15
18.	Mourre	11
19.	Corum	10
20.	Johnson	10
21.	Hepburn	10
22.	James Hill	5

Macon County, Ill., Plans Its Greatest Automobile Show

DECATUR, Ill., June 27.—The biggest automobile show ever given in Macon County, is the ambition of local dealers who have already begun preparations for the exhibition in connection with the county fair in August.

A tent, 100x250 feet will be pitched, wire-enclosed spaces allotted, the canvass decorated as magnificently as a winter show and space allotments made sufficient for three or four machines.

25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of July 5, 1900)

The Automobile in Washington

WASHINGTON, June 23.—Gradually the automobile is assuming a position of importance in the commercial life of the national capital. Several hotel proprietors have lately been experimenting with automobiles with a view to substituting them for their horse-propelled vehicles running between the hotels and the depots, and judging from the satisfaction they are giving and the patronage they are commanding, it is not too much to say that the familiar hotel omnibus with its pair of horses will soon be a thing of the past—at least in Washington. The department stores are also experimenting with automobiles in the delivery of goods and it is proving a good advertisement for them.

Cleveland Club Exhibition

The Cleveland Automobile Club, which is the second oldest organization of the kind in the country, is planning for a public exhibition and races, designed to familiarize the people with the possibilities of the automobile and to convince them that it is already a fixed element of transportation. In addition to a road race, it is proposed to have obstacle races,

Southern California Sales Increase Greatly in May

New Automobiles Show Advance of 25 Per Cent Over Same Month Last Year

LOS ANGELES, June 27.—The most encouraging sales situation that has existed in southern California for many months has been revealed here with the announcement of the registration of new motor vehicles for May.

Total registration of new automobiles for the eleven counties of the southern part of the state was 9,273, or an increase of 25 per cent over May of last year. The total commercial car registration was 1,101 or an increase of 17 per cent over 1924.

Among the makes showing the largest gain were Chevrolet, Chrysler, Dodge Brothers, Hupmobile, Lincoln, Maxwell and Nash. The most sensational increase was made by Hudson-Essex, Hudson jumping from 78 to 721 and Essex climbing from 85 to 618.

NEW JR-8 DEALERS

BRIDGEPORT, Conn., June 27.—Announcement is made by the Locomobile Company of America, Inc., of the appointment of the dealers who will handle the new JR-8, deliveries of which are now being made:

Locomobile Co. of New Rochelle, New Rochelle, N. Y.; Thomas H. Sinclair, Port Chester, N. Y.; C. A. McClintock Company, Pittsburgh, Pa.

maneuvering contests, grade climbing races and other interesting performances. It is the present plan that the exhibition shall be free and that it shall be held at a time and place that will make it possible for a large number of people to be present.

Speed Reports

At Brussels in a contest for the flying and standing start, Jenatzky with his 3 h.p. gasoline vehicle covered the flying start kilometer in 38 1/5 seconds, a speed of 94 kilometers (50 1/2 miles) to the hour; the former record belonged to Lemaitre, in 47 4/5. Another Belgian, Miesse, rode the same distance in a steam vehicle in 48 4/5 seconds, which is also a world's record.

German Exhibition Planned

A general motor car exhibition will take place at Leipzig from October 19 to 23 in connection with the third German cycle exhibition. The motor division will comprise six groups and deal most extensively not only with the industry itself, but with literature and other items pertaining to the industry. The exhibition is open to competitors of all countries.

New Orleans Reports June Business Better Than May

General Business Outlook Good With Heavy Buying Expected in August

NEW ORLEANS, June 27.—Business for June in most automotive lines, retail and wholesale, was slightly increased over the May business. The general business outlook as it affects the automotive industry is optimistic. Rains came in time to save the truck crops of both Louisiana and Mississippi and the rice crop of the first named state. The tendency is for an increase in time sales. Collections on cars are slow, but repossession were reported as few. The used car demand during May was brisk. Automotive wholesalers of cars, accessories, parts, etc., reported that dealers were slow in paying and that they gave as a cause slow payment of the retail trade to them.

It is felt that July will be a good average month in this section, but that August will be much better for new cars. People, instead of buying new cars generally now, are, many of them, waiting until fall for the new models and also using their old cars or buying used cars to vacation in during the summer. The vacation period seems to have helped the accessory and replacement parts business in that it is causing many to overhaul old cars to get them ready for taking trips.

NEW PEERLESS DEALERS

CLEVELAND, O., June 27.—Following are the new dealers added to the Peerless organization recently:

Egyptian Motor Car Co. of Duquoin, Ill.; Cumberland Peerless Co. of Cumberland, Md.; North Shore Peerless Co.; Woodside, L. I., New York; Van Kollem & Taemens of Babylon, L. I., New York; John E. Meyers, Boonton, N. J.; Miami Motor Car Co., Miami, Okla.; H. W. Bell, Brownsville, Tex.; A. J. Gilliam, Asheville, N. C.; James D. Hazlett Motor Co., Galesburg, Ill.

SECOND FORD DIVIDEND

DETROIT, June 20.—Directors of the Ford Motor Co., Ltd., of Canada, have declared a dividend of 10 per cent paid June 30 to shareholders of record at the close of business on June 20, 1925. This is the second dividend of 10 per cent to be declared by the Ford Motor Co., Ltd., of Canada, during the present fiscal year. The first dividend was declared last fall.

Co-operative Salvaging of Junk Rubber Is New Plan

ST. LOUIS, Mo., June 27.—A co-operative system of salvaging junk rubber from tires and the institution of a Credit Bureau involving the exchange of credit information between members were discussed at a recent meeting of the Associated Tire Dealers of St. Louis at the Claridge Hotel. A committee to work out details of both plans was appointed. It is composed of E. L. Meyer, Jr., of

St. Louis Distributor Will Radiocast

ST. LOUIS, Mo., June 27.—E. J. Krause, president of the Ernest J. Krause Co., 5187 Delmar boulevard, distributor of the Rolls-Royce and a Moon dealer here, has just returned from Washington, D. C., where his application for the installation of a high-powered broadcasting station was approved. The call KEJK has been allotted to his station and a temporary wave length of 400 meters has been given.

Meyer and Kemp Tire Co., chairman; Joseph Delabar, Sternwear Tire Sales Co.; Chris Hasenpflug, Hasenpflug Tire Co.; Arthur G. Jennings, business manager of the Association and J. A. Estes, field secretary of the National Tire Dealers Association.

Up to the present time it has been the practice of tire dealers to dispose of their salvage tires to junk dealers at a trifling price in order to get rid of them but the increase in the price of crude rubber convinced the dealers that co-operative selling of junk tires would be more profitable because it will be possible to gather them at low cost and sell them in quantity to the highest bidder. Each member in the movement is to receive a credit slip for the junk tires he contributes and at the end of a stated term the proceeds will be prorated.

Under the new plan of operating the credit bureau it is proposed to allow a disinterested official of the association make a confidential examination of the books of members to ascertain the credit standings of their customers. Previously it has been the policy to permit members to submit their own lists of delinquent customers and the results showed that such lists were not accurate.

Wilson Foundry Expansion Program Will Be Rushed

Pontiac, June 27.—Orders have been given calling for increased speed in the erection of the \$2,000,000 expansion project of the Wilson Foundry located here. Under the new plans, the factory should be operating at full capacity by October 1. A big increase in the demand for the new Willys-Knight sixes is given as reason for rushing work of completing the factory.

The foundry, one of the largest devoted exclusively to the manufacture of automobile engines in Michigan, is engaged in making motors for Willys-Overland. The present plant employs 4600 men. With the increased facilities, it is expected that this number will be increased to 6,000.

The building of the new structures will cost approximately \$1,500,000. The remaining \$500,000 will be spent in replacing old machinery and in the installation of the latest design machinery for foundry work.

Sales in Detroit Continue Sensational Pace of April

Absence of 1924 Models Features Trade-In Business This Season

DETROIT, June 27.—Sales which have kept up the sensational pace set in April may establish a new all-time monthly record for Detroit according to several of the leading dealers and registration figures for the first half of June.

New car demand has not been confined to any one particular class, each make getting its proportion of the business. Many sales topped the 11,000, the best local performance on record.

One of the unusual features of the trade-ins is the absence of 1924 models. Indications are that owners intend to drive last year's models for another season before trading them in. Dealers' stocks of used cars are lower than at any time this year, despite the large number of cars taken in on trades.

A definite shortage of used cars of the more expensive makes exists. Cars that when new sell for \$2000 and up do not stay on the used car floor more than 24 hours.

Renault Stock Model Breaks World's Record for 24 Hours

PARIS, June 9.—(By mail)—The six-cylinder four-passenger stock Renault, driven by Garfield and Plessier, broke the world's 24-hour record on Montlhery track this week by covering a distance of 2,103.19 miles in the two rounds of the clock.

The car used for this purpose was a 45 hp. 6-cylinder engine of 4.3x6.29-in. bore and stroke, giving a piston displacement of 602.6 cu. in. The previous record had been set up only two weeks earlier by Thomas Gillett driving an English 6-cylinder A. C. of only 122 cu. in. piston displacement, with which he covered 1950 miles in the 24 hours.

In this attempt the Renault captured nine world's records according to the ruling of the International Association of Recognized Automobile Clubs which does not recognize any records established in America. The car maintained a very regular pace of practically 98 miles an hour for the first sixteen hours, and began to break existing records from 1,000 kilometers onward.

Mechanical trouble developed after the twenty-first hour. The timing gear chain broke and had to be replaced by a chain taken from another car, and in addition several blades broke away from the flywheel fan. Owing to this the average during the last three hours dropped to 25 miles an hour, but the Renault had such a lead on the previous performance that these records were established with a fairly wide margin.

June Sales Show Advance In Chicago Trade District

**Business Believed As Good As in
May Which Was Record
Month**

CHICAGO, June 27.—Wholesale, retail and production phases of the automotive industry showed marked advances during June. Most of the retail dealers had far more orders than could be filled, ending the month with many deliveries still on paper.

Wholesale business throughout the trade territory served by Chicago, including several of the states west of the Mississippi, was beyond that of any month this year. May had set a record with a large number of the wholesalers but unofficial figures show that June was even better.

Although the greater number of the metal industries suffered declines late in May and early in June, with business falling off and employment figures low, the automotive industry was the principal exception. Automobile and accessory concerns were the outstanding examples of expansion in the metal trades, as they employed about 9.9 per cent more workers than in previous months.

It is believed by most manufacturers that this expansion is a salient instance of the leveling of the seasonal curve in automotive production. As the curve nears the line, the accessory business follows closely. It is believed that this accounts largely for the expansion in automotive metal trades while other metal trades are on the decline.

The same quickening of the production trade is noted in Indiana, a large part of which is included in the Chicago trade territory. Some of the Indiana brass works are reporting declines.

Dealers all report as good June business as in May which was a record month. Open models are showing improvement. Sedan models are the best sellers, but a number of touring cars and roadsters also are moving. A large percentage of the open cars are going to export trade. However, several dealers have expressed the opinion that open models are selling better at present than they have for some months past.

MINIMUM SPEED LAW

HARTFORD, June 27.—Connecticut's minimum speed law, whereby the highway commissioner may refuse to license a motor vehicle which is incapable of maintaining a speed of at least 12 miles an hour, is now in force. Commissioner Robbins B. Stoeckel announces that it will be rigidly enforced. Another piece of new legislation forbids the attaching of stickers to windshield or rear window in such manner as to interfere with vision, marking the exit of the bathing girl.

Vocational Training Boosted by Ford

WINDSOR, Ont., June 27.—Vocational education in this city has received what the school authorities regard as invaluable encouragement from the Ford Motor Co., Ltd., of Canada, in its provisions of a three-year apprenticeship course for the graduates of the Windsor-Walkerville technical high school.

The graduates who will be allowed to go into either the tool and die, electrical or sheet metal departments will be paid 40 cents an hour for the first year, 50 cents an hour for the second year and 60 cents an hour for the third and last year.

Fourteen graduates have already availed themselves of the offer, eight choosing tool and die department, four the electrical department and two the sheet metal department.

Up until the present offer, the school had nothing definite in the way of positions to offer its graduates. The offer is considered by school authorities as one of the biggest steps toward fulfilling the purpose for which the technical courses were formed.

LOOK OUT FOR THESE CHECKS

The Jessup Motor & Supply Co., Dodge Brothers dealers of Hannibal, Mo., has had a bad check experience which should be of interest to other members of the trade. The Hannibal house was given a "Universal Traveler's Check" on "The Oriental Tourist Company, of Los Angeles" in the sum of \$10 in payment for storage and supplies. Payment of this check was refused on the ground that it had no value, the investigating California bank reporting to the Jessup Company's bank that it had no knowledge of the Oriental Tourist Company and stating it had been informed that the country has been flooded with such worthless checks.

AUBURN ORGANIZATION

AUBURN, Ind., June 27.—Following are new distributors and dealers added to the Auburn organization:

Distributors

Tri-City Motors, Louisville, Ky.; J. A. Wicke, Cedar Rapids, Ia.; Pittsburgh-Auburn Co., Pittsburgh, Pa.; H. W. Neuman Machine Co., Davenport, Ia.; Ike Carpenter, Allegan, Mich.; A. C. Barnhart, Wichita, Falls, Tex.; L. E. Tait, Lincoln, Nebr.

Dealers

Max H. Stock, Ashland, Ky.; B. E. C. Slauson Auto Co., Glendale, Cal.; R. E. Giddens, Carrollton, Ky.; Howard Avenue Motor Sales, Chicago, Ill.; Guy McCullough, Glasford, Ill.; Alexander Auto Co., Lebanon, Ind.; Riverside Motor Sales, Buffalo, N. Y.; W. B. Naugle, Santa Paula, Calif.; The LaFayette Phoenix Garage Co., Lexington, Ky.; Auburn Sales Co., Salem, O.; Auburn Motor Sales & Service, Canton, O.; Albert Kislewicz, A. K. Garage, Cleveland, O.; L. LeVasseur & Sons, Arctic, R. I.; Walter D. Herr, Athens, N. Y.; Miller & Zilliox, Hamilton, O.; Catherine Levine & Son, Highland Park, Ill.

Chrysler Will "Equip" Cars With Flat Rate Insurance

**New Retail Finance Rates for New
and Used Automobiles Also
Announced**

DETROIT, June 27.—Announcement of new and reduced retail finance rates on Chrysler cars and the establishment of a flat insurance rate covering fire and theft insurance uniform throughout the entire United States was made here today by the Chrysler Motor Corporation. Effective July 1, 1925, all Chrysler cars will be delivered to the public insured for one year. This insurance is "standard factory equipment."

Arrangements have been made with the Commercial Credit Company of Baltimore, Commercial Credit Corporation, New York City, Commercial Credit Trust, Chicago, and Commercial Credit Co., Inc., New Orleans, to finance the sales. Separate and distinct terms regarding the financing of new and used cars have been made.

With new cars, there is no recourse, no re-purchase agreement. This is applicable everywhere in the United States; no insurance charges are included in the rates; the down payment will be at least one-third of the cash delivered selling price; and the balance must be paid in twelve equal monthly installments; the financing is figured on the unpaid balance.

It is possible to pay the balance in less than 12 installments and in such cases the finance charges grow less, viz.: When the note is for one month, the charge is 2½ per cent, two months, 3 per cent, three months, 3½ per cent, four months, 4 per cent, five months, 4½ per cent, six months, 5 per cent, seven months, 5½ per cent, eight months, 6 per cent, nine months 6½ per cent, ten months 7 per cent, eleven months 7½ per cent and one year 8 per cent.

According to Chrysler officials, the saving to Chrysler time buyers will be from 30 to 40 per cent less than present rates.

With used cars there is no recourse, no re-purchase agreement; as regards insurance, the finance charge includes fire and theft insurance for 80 per cent of the cash delivered selling price, for one year; the down payment is at least 40 per cent of the cash delivered selling price; the balance calls for not more than twelve monthly installments, provided that the installments shall not be less than \$15 monthly. A plan for financing used car sales along the new car sales plan has been devised.

FLYER PLANS GROUND TRIP

WASHINGTON, June 27.—Lieutenant Leigh Wade, one of the army world flyers, will leave Los Angeles July 16 on an attempted non-stop automobile trip to New York, it is announced here by the American Automobile Association which will sponsor the venture. He expects to arrive in New York July 23.

Cannon Ball Baker Claims Many Long Distance Records

Rickenbacker's Chief Test Pilot Kept on Constant "Go" By His Novel Job

DETROIT, June 27.—Anyone who thinks Cannon Ball Baker has not been a busy man as chief test pilot of the Rickenbacker Motor Company will get another idea on looking over his list of outstanding "jobs" so far this year. "Miscellaneous" jobs are not included in the list. Here are some of the things that have kept Baker busy and incidentally some of the late records he claims:

Mid-winter drive from New York to Los Angeles in 71 hours, 33 minutes actual driving time.

"Three Flags" drive, from Vancouver, B. C. to Tia Juana, Mexico, 1,558 miles, covering the distance in 40 hours, 57 minutes.

San Francisco-Los Angeles run, clipping 18 minutes and 50 seconds from best previous record and averaging 49.05 m.p.h. despite handicaps of mountainous conditions and the fact that more than half the route was over gravel highways.

El Paso, Texas to Los Angeles, Calif., 21 hours, 33 minutes, total elapsed time; 908.5 miles, 42.48 miles per hour average.

El Paso, Texas to Phoenix, Ariz., 10 hours, 12 minutes, total elapsed time, 429.1 miles, 42.07 miles per hour average.

Phoenix, Ariz. to Los Angeles, Calif., 11 hours, 11 minutes, total elapsed time; 479.4 miles, 42.87 miles per hour average.

San Luis Obispo, Calif. to Los Angeles, Calif., 4 hours, 24 minutes, total elapsed time; 212.9 miles, 48.4 miles per hour average.

Ogden, Utah to Salt Lake City, Utah; 36 minutes, 18 seconds total elapsed time; 36.5 miles; 60.33 miles per hour average.

Boise, Idaho, to Idaho City, summer and return in second gear; 30 minutes, 39 seconds, total elapsed time; 16 miles; 31.32 miles per hour average.

Boise, Idaho, to Salt Lake City, Utah; 9 hours, 7 minutes total elapsed time; 398 miles; 43.65 miles per hour average.

Circle Route Denver; 1 hour, 17 minutes, 13 4-5 seconds, 57 miles; 44.28 miles per hour average.

Lookout Mountain, Denver, base to summit; 6.2 miles; 10 minutes, 31 2/5 seconds, total elapsed time; 36.38 miles per hour average. Summit to base; 6.2 miles; 9 minutes, 31 2/5 seconds, total elapsed time 39.06 miles per hour average.

Denver, Colo. to Kansas City, Mo., 16 hours, 36 minutes, total elapsed time; 686.4 miles; 41.35 miles per hour average.

Kansas City, Mo. to Excelsior Springs, Mo., and return; 1 hour, 8 minutes, 34 seconds total elapsed time; 57.6 miles; 50.4 miles per hour average.

Texas Firm Holds "Bargain Days" To Sell Used Cars

WICHITA FALLS, Tex., June 27.—The Keim Motor Co. of this city, Studebaker dealers, has applied practices of grocers and department stores to its used car department with pleasing success.

The company is featuring Friday and Saturday of each week as "Used Car Days" at which special bargains are offered. These bargains are advertised in local papers and have been found they "pull many prospects" to the sales rooms. The "Used Car Days" will be continued by the company, John L. Laughlin says.

The Keim company reconditions its used cars. On Fridays and Saturdays there are some special bargains which attract the attention of the people who are thinking of buying a car for driving about on Sunday, or any other day.

Lupton Service Helps Dealers Lay Out Parts Departments

DETROIT, June 27.—A department to help dealers lay out their parts departments and profitably merchandise parts and accessories has been instituted by David Lupton's Sons Co. E. H. Spears, sales manager of the automotive equipment division of the company, has charge of this service which is free to automotive dealers. Dealers contemplating a new building or change of building or parts department may have this service by submitting a sketch of the proposed floor plan. The dealer is then furnished with a detailed plan for his parts department, together with merchandising suggestions. A mail information bureau is operated to follow up and give needed advice and when necessary a field supervisor will call to assist the dealer in solving his problems. The company also has a booklet, "Better Parts and Accessory Merchandising," for free distribution to dealers.

CHANDLER DEALERS NAMED

CLEVELAND, O., June 27.—The Chandler Motor Car Company has named new dealers as follows:

McCarty-Greene Motor Co., Gadsden, Ala.; Horton E. Ostrander, Wallace, Idaho; W. H. Tanzey, Stockton, Kans.; Hagerstown Chandler-Cleveland Co., Hagerstown, Md.; Bradford Garage, Brockton, Mass.; Murdock N. Melrose, Washington Street Garage, Brookline, Mass.; Central Garage Co., Canton, Mass.; Somerville Motor Mart, Inc., Somerville, Mass.; Winthrop Chandler-Cleveland Co., Winthrop, Mass.; Broadway Garage, Cape Girardeau, Mo.; B. & M. Chandler-Chevrolet Co., Columbus, O.; N. J. Boden, Avon, N. Y.; Otto Tauffner, Tonawanda, N. Y.; The City Motor Car Co., Middletown, O.; Brownsville Chandler-Cleveland Co., Brownsville, Pa.; Scott S. Gill, Coalport, Clearfield County, Pa.; West Indiana Motor Co., Indiana, Pa.; Guenther Motor Co., Souderston, Pa.; W. E. Laidacker, Watsonstown, Pa.; George A. Joseph, La Crosse, Wis.

LUSK GETS WHITE TROPHY

NEW ORLEANS, La., June 27.—Milton W. Lusk, New Orleans sales manager of the White Company, has been presented with the president's trophy in honor of having achieved the highest percentage of sales of White trucks as per quota in the company's contest that ended April 15. The award of the trophy took place at a banquet at which Walter C. White, president of the White Company, presented the trophy to Mr. Lusk in the presence of all the southern executives of the company, who were present for the occasion.

Automotive Payroll Reaches High Point at End of May

Employment at Plants Increased Fifty-Six Per Cent During First Five Months

WASHINGTON, June 27.—The amount of payrolls in the automotive industry has increased over 56 per cent since last January and in April practically equalled the highest point ever reached, it is announced here by the Federal Reserve Board in its official June bulletin. It is further set forth that production of automobiles in April was at a new high record with the output of passenger cars in the United States about 376,000 in April, an increase of 115 per cent in the four months since last December, when production was the smallest since early 1922.

"Employment," continues the bulletin, "has also increased considerably, but the index for April did not equal the figures for the first four months of 1924. Weekly reports of employment in Detroit manufacturing plants, however, indicate further substantial increases during May."

Large Sales Volume

"Shipments and sales of automobiles have also been large and, in fact, according to reports, have made the high rate of production necessary in order to meet the demand. Freight car load shipments of automobiles in April were the largest ever recorded except in March, 1924, and driveaways and shipments by boat both exceeded corresponding figures for any month since 1923, when there was a slight shortage of freight cars."

Middle western dealers, reporting to the Federal Reserve Bank of Chicago, showed substantial increases in both wholesale and retail sales during April, as compared with March. Further evidence of increases in factory sales of automobiles is given by figures of internal revenue collections. Taxes collected on automobiles and motorcycles, other than trucks, totaled over \$11,000,000 in April, as compared with only \$5,700,000 in March and \$9,500,000 in April, 1924. Sales of accessories and parts have also increased considerably in recent months.

Fiat Company Opens Active Campaign for Small Model

Novel Sales Methods Necessary Because of Rapid Exchange Rate Shifts

PARIS, June 13—(By mail)—An active sales campaign in favor of their new light car is being carried out by the Fiat Company in Italy. At the Milan Samples Fair a special hall was made use of for exhibiting all the varied types of bodies standardized on this chassis. On the close of the exhibition the twelve exhibition cars were placed in charge of the ex-race driver Felice Nazzaro and sent on a tour round Italy, calling at all the big cities and remaining on exhibition in each of them for a few days.

Fiat is taking orders for these cars on rather original lines. If cash payment is made with the order, a definite guarantee is given that there will be no increase, but there is no guarantee as to delivery date. This price is based on the present value of the lira relative to the dollar. If only part payment is made on placing the order, the possible increase on the outstanding amount will be proportionate to the increase in the cost of the dollar.

Only a general indication has been given as to delivery dates, but so great is the confidence of the Italian public in the Fiat Company that orders are flowing in at a record rate, most of them being full cash payment in advance. This has given the company several million liras cash and has made it possible for them to purchase dollars to cover the cost of all raw material required from abroad for an immense number of cars.

Recognizing the unusual nature of this method of salesmanship, and believing that it would have an important influence on the entire Italian automobile market, the Fiat Company called together all other automobile manufacturers and the leading importers of foreign cars and revealed their plan to them before presenting it to the public. Other firms were given an opportunity of participating in this scheme if they desired.

Deliveries of the new Fiat small car have not yet begun, but work on the new factory, erected specially for this model, being now almost completed, it is expected that deliveries will be made in big quantities in the early Fall.

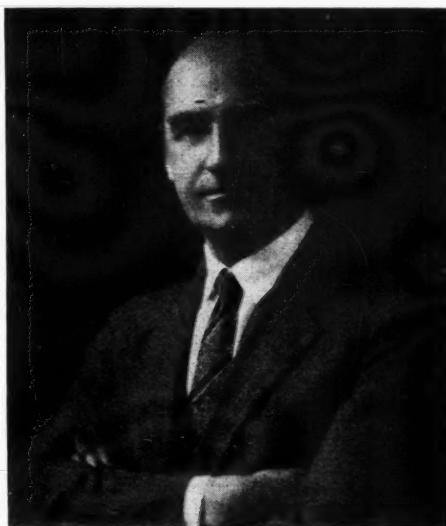
NEW OAKLAND DEALERS

PONTIAC, Mich., June 27.—Oakland Car Company announces the following new dealers:

Oakland Motor Sales, Chicago, Ill.; Lake Shore Auto Sales, Evanston, Ill.; Quick Motors, Watertown, N. Y.; Srader-Calloway Motor Co., Broken Arrow, Okla.; Miller's Auto Service, Bloomington, N. J.; Arlington Garage, Kearney, N. J.; Kennedy & Kipper, Bellefontaine, O.; Kaleva Auto Company, Astoria, Ore.; Smith & McCarthy, Pittsfield, Mass.; J. F. Hardin, McMinnville, Ore.

Herman Boltz, Gardena, N. D.; Oakland Sales Company, Guthrie, Okla.; Darneille Griffin Motor Co., The Dalles, Ore.; Wichman Motor Co., Farmington, Mo.; Majeres Service Station, Garrison, N. D.; Sands

New President of Gray Motors



Ernest M. Howe

Motor Sales Co., Inc., New Market, N. H.; Globe Garage, Southbridge, Mass.; Patterson & Boyer Motor Co., Easton, Pa.; R. O. Vaughan, Austin, Tex.; Crawford Garage, Roxbury, Mass.; Helenick Motor Car Co., Blushing, N. Y.; Richmond Motor Sales Co., Richford, Vt.; Ward's Garage, Leominster, Mass.; Middletown Bond Service, Inc., Middletown, N. Y.

W. A. Wright, Paris, Ill.; N. M. Conger, Warsaw, N. Y.; Rucker Auto Supply Co., Ashland, Ky.; Pikeville Oakland Co., Pikeville, Ky.; A. Ehlers, 306 West B Street, McCook, Neb.; Boone Tavern Garage, Berea, Ky.; Tri-Cities Motor Co., Louisville, Ky.; Guetschuff & Quist, Gaylord, Minn.; Watsonville Garage, Watsonville, Calif.; A. B. Kelley, Shelbyville, Ill.; Anderson Motor Co., Independence, Mo.

Hupmobile Shipments Jump 30 to 40 Per Cent in June

DETROIT, June 27.—An increase of from 30 to 40 per cent will be shown in June shipments of Hupmobiles over the same period last year, according to O. C. Hutchinson, general sales manager of the Hupp Motor Car Corporation. The figures for the present month also will be higher than the shipments for June, 1923, and will exceed May by at least 500 cars.

From June 1 to June 10, eight cylinder shipments and orders for shipments totaled more than 1200 cars. This created a new Hupp record for its cars of the eight-in-line type. Figures given out at the factory show that Hupp carried over into June more than \$2,000,000 worth of unfilled orders. In addition orders for the different models in excess of \$3,000,000 were received at the factory during the first ten days of June.

According to Mr. Hutchinson, the recent reduction of \$180 in the price of each model has caused the sales to jump 30 per cent higher than their previous record. The indications are that the sales will continue to show the same steady climb for the next several weeks.

Western Aero League Is Organized at Los Angeles

New Body Will Cover All Territory West of Denver, According to Plan

LOS ANGELES, June 27.—With the establishment of permanent airports and air landings for transcontinental flyers as its chief aim, the Western Aero League has been organized in Los Angeles with a large initial membership. The organization meeting was held at Ross Field, Arcadia, and the following officers were elected: Dr. C. T. Young, Glendale, president; Earle Ovington, Santa Barbara, first vice-president; Lieut. C. P. Kane, Ross Field, second vice-president; Frank H. Page, San Diego, third vice-president; A. L. Olinger, Santa Ana, treasurer; Howard I. Wood, Glendale, general secretary; Robert Hausler, Winslow, Ariz., field secretary.

Arrangements were made to incorporate in California as a non-profit organization and to file papers in all states west of Denver, which will be the territory covered by the new league. A program for furthering aviation was adopted and assurances of co-operation were received from more than a dozen chambers of commerce. Glendale was selected as the headquarters of the league for the ensuing twelve months, and the next formal meeting will be held at San Diego in August.

Memberships are promised the league from Arizona, New Mexico, Oregon and Washington and directors will be added from these states as soon as they are received. The directorate is now composed as follows: T. C. Young, Glendale; Frank H. Page, San Diego; W. G. Scott, Bishop, Cal.; Earle Ovington, Santa Barbara; Lieut. C. P. Kane, Army Air Service; Ben Spencer, Ontario, Cal.; A. L. Olinger, Santa Ana; George B. Harrison, Los Angeles; Howard L. Wood, Glendale; Earl S. Daugherty, Long Beach; Bob Hausler, Winslow, Ariz.; Elliott H. Barrett, Los Angeles; Thomas B. Slate, Glendale; J. W. Jennings, Bell, Cal., and J. C. Reilly, Glendale.

BODY COMPANY EXPANDS

CINCINNATI, June 27.—The Burkett Closed Body Co., Dayton, Ohio, has acquired 71,000 square feet of factory space on Davis street which will be utilized in the manufacture of closed automobile bodies. Under present conditions the company has a production of thirty closed automobile bodies monthly. In the new factory, which is three stories high with a private railroad siding, present production will be tripled. The company now employs about forty skilled workmen, but that number will be doubled in the new plant. The present factor of the company located at 1312 East First street, has been leased for five years to the Coffield Tire Protector Co.



Along Automobile Row



KANSAS CITY.—An agency for the Rolls-Royce motor car has been opened here, the first in Kansas City. The agency is known as the Rolls-Royce Parker Schaefer, Inc.

BOSTON.—The Auburn Boston Company has purchased the business here of the F. A. Dutton Motor Company, for a number of years distributor of the Auburn for New England.

CLEVELAND, O.—The Solenberger Piston Ring Company of Cleveland announces the establishment of a factory branch at Los Angeles. Thomas C. Cooper will be in charge of the new branch.

SPRINGFIELD, MASS.—George E. Adams, Inc., is now distributor in Springfield for Ford cars, taking the place of the former H. K. Smith Company.

ST. LOUIS, MO.—Diesing Motor Sales Co., Rickenbacker distributor in St. Louis, has moved to its new quarters at 2216-18 Locust street. The move was made to give the company additional space.

CHICAGO.—Thomas A. Warren has opened a Kissel agency in Oak Park, Illinois. He was for many years sales manager for H. P. Branstetter, Inc., Kissel Car distributors. The name of the new company is the Oak Park Kissel Sales Company and is located at 1028 Madison street.

LOS ANGELES.—The J. W. Leavitt Company, California distributors for the Oldsmobile, announces the following appointments of Oldsmobile dealers in Southern California: H. C. Landstrom, Bakersfield; R. A. MacLean Motor Sales Company, Burbank; Fullerton Motor Company, Fullerton; Frehm Oldsmobile Company, Santa Ana.

DETROIT.—Byron C. Foy, former Detroit business man who for the past four years has been distributing cars in Los Angeles, has returned to Detroit as a partner in the John H. Thompson Company, Maxwell-Chrysler distributors for Detroit and the surrounding territory. Mr. Foy's new position will be that of vice-president and treasurer, Mr. Thompson retaining the presidency of the firm.

SPRINGFIELD, MASS.—Jack Lenihan, proprietor of the Olive Street Garage in Greenfield, Mass., has been appointed Paige and Jewett dealer in that territory.

ROCK ISLAND, ILL.—The Greenlease Motor Company of Kansas City has taken all holdings of the J. H. Hansen Cadillac company in Sioux City and Omaha, and although complete announcement of the plans of the new owners has not been made it is understood the organizations will be retained intact.

DES MOINES.—C. B. Ziegler and W. H. Rosenberger, former owners of the Electric Car Service station, 209 Tenth street, have opened the Capitol garage, 1012-16 Locust street, with complete mechanical, lubrication and electric car service maintained.

MEMPHIS, TENN.—Appointment of the Harter B. Hull Co. as dealer in Memphis and vicinity, succeeding the Hull-Cameron Co., is announced by Dodge Brothers.

DAVENPORT, IA.—Forty agents for the Studebaker car from the eastern Iowa and western Illinois territory met at the Hotel Blackhawk for a sales-building conference conducted by the factory executives throughout the country.

MONTREAL.—The Royal Garage, McGill College Avenue, has been opened to the public. It is a fireproof building with space for 370 cars, and is the last word in modern garage construction.

WINNIPEG, MAN.—Great West Motors, Ltd., has taken over the salesroom and garage formerly occupied by Capital Motors, and from this location will handle a full line of Chevrolet and Oakland cars and Reo trucks, using the premises as a salesroom and service station.

HALIFAX, N. S.—The opening recently of the new quarters of the Archibald Motor Co., this city, gives the city of Halifax the largest motor show room and service station east of Montreal.

FORT WILLIAM, ONT.—Roach & Irwin is the name of a new company operating in the twin cities and Port Arthur. They will handle Maxwell-Chrysler lines in addition to International trucks.

KOKOMO, IND.—Pending the appointment of a new sales manager to succeed E. M. Lubeck, who resigned, O. T. Guennee, formerly assistant manager of sales and advertising, is acting general sales manager of the Baker Apperson Automobile Co.

NEW ORLEANS.—Abbott Motors, Inc., distributor of the Packard line in about one-third of the state of Louisiana and in a few counties of Mississippi, now located at 1400 St. Charles avenue, will remove to 1711 St. Charles avenue about October 1.

BALTIMORE.—The Maryland Tire Co., Inc., 1011 West North avenue, Baltimore, has been incorporated with \$25,000 capital stock to deal in automobile tires and electrical supplies.

OSHKOSH, WIS.—Krueger Automobile Company of 62-64 State street, has been appointed Nash and Ajax dealer in Oshkosh and vicinity.

MADISON, WIS.—The East Side Motor Co. has been formed at Madison, Wis., to carry on a general garage business. Capital stock of the new organization is \$25,000.

WILMINGTON, DEL.—Harry N. Partington has been appointed general sales manager of the Wilmington Automobile Co., 221 West Tenth street. The company handles the Buick and Chevrolet lines.

LOS ANGELES.—Lynn C. Buxton has withdrawn from the retail field as a Willys Knight and Overland dealer and henceforth will confine his activities as a distributor of Stearns-Knight cars in Southern California.

BIRMINGHAM.—The Olds Motor Works has announced the appointment of the Jordan Motor Company, distributors for the Oldsmobile in Birmingham, Bessemer and surrounding territory.

DETROIT.—W. M. Chamberlain, director of sales development of the Oakland Motor Car Company, announces the appointment of M. L. Buck as field instructor, succeeding G. A. Johnston, who becomes retail sales manager of the Matheson-Oakland Company, Grand Rapids, Mich.

NEW ORLEANS.—Harry Dawes has opened in Natchez, Miss., the Dawes Motor Company, which will handle Star cars exclusively.

AKRON.—Walter E. Smith, of Youngstown, O., is the new local distributor in this territory for American-Akron tires. Mr. Smith now conducts an automobile accessory shop in Youngstown.

HARTFORD, CONN.—Russell P. Taber, Reo distributor in nearly all of the state of Connecticut, will on August 1 take over the Reo representation in Hampden county, Mass.

SAN ANTONIO, TEXAS.—The Wroten-Hundley Motor Company, Dodge dealers and distributors in the San Antonio territory, has incorporated. The capital stock is \$160,000.

TOLEDO.—Robert E. Clingan, who for several years has been operating head of The Bock Bearing Company, one of Toledo's largest industries, was elected president of the company at a recent meeting of the board of directors.

LOS ANGELES.—Mutual Motors, Inc., Southern California distributor for the Roamer, announces the appointment of W. F. Luvasky as the Roamer dealer in Hollywood, with sales and service building at 3206 Los Feliz boulevard.

CHICAGO.—J. A. Hayes, formerly associated with Garford and GMC trucks, has been appointed district sales manager for the Diamond T. Motor Company with Wisconsin and Minnesota as his territory.

NEW ORLEANS.—Ground has been broken for the erection of a new building for the Chevrolet Motor Co., at the corner of Baronne and Julia streets.

MILWAUKEE.—The Achen Motor Co., Chandler and Cleveland distributor in Milwaukee, has purchased a plot of ground, 120 by 156 feet, at the southwest corner of Jackson and Oneida, streets upon which a new three-story automobile sales and service building will be erected.

ST. LOUIS, MO.—A reorganization of the company which was recently formed to distribute Kissel cars in St. Louis has been effected. The name of the company has been changed from the Meyer-Price Motor Car Co. to the Price-Renaud Motor Co., Inc.

CHICAGO.—The Lohley Motor Sales Company, 2658 Lawrence avenue, Jordan dealers, have been appointed northwest side dealers for sales and service on Moon cars.

LOS ANGELES.—Harry Handiges, formerly assistant sales manager at the Los Angeles factory branch of the Star Motor Company of California, has been appointed sales manager of the Fresno factory branch of the same company.

MILWAUKEE.—J. S. Alcott, formerly in charge of wholesale and retail sales for R. D. Rockstead, Milwaukee, when distributor of Gardner and Lexington motor cars for Wisconsin and Upper Michigan, has been appointed head of the sales organization of the Belden-Nash Motor Co. of Racine, Wis.

DAYTON, OHIO.—The Miami Garage Co. has been chartered with an authorized capital of \$200,000 to operate a general garage.

LITTLE ROCK, ARK.—R. A. Cook has bought the controlling stock in the McGill-Bowman Overland Company, 313-315 West Capitol avenue, local distributors for the Willys-Knight Overland Company.

BOSTON.—R. W. Burham, manager of the Boston organization for J. C. Harvey of Worcester, has signed a direct factory contract to distribute Moon and Diana cars here. The company is also associate dealer for the Peerless in Boston.

NEW YORK.—Gunner R. Lundane, formerly manager of the New York office of the Black & Decker Manufacturing Company, has resigned to join the United States Electrical Tool Company of Cincinnati, Ohio.

MOLINE, ILL.—Harry Holm and Andrew M. Nielson, well known auto dealers in Moline, have established an Oldsmobile agency at 246 West Main street, Galesburg, Ill., with Mr. Holm in charge of the Galesburg office.

DETROIT.—Malcolm McCormick, sales manager of the replacement parts department of McCord Radiator & Manufacturing Company, has resigned effective July 1 and his duties will be assumed by P. L. Barter, vice president in charge of sales, who, heretofore, has had general supervision.

COLUMBUS, O.—Public opening of the new Hudson-Essex sales and service establishment, 552 E. Broad street, was held recently. The company is distributor for the Hudson-Essex motor cars.

CINCINNATI.—Backmeier Sales Corporation with general offices in Cincinnati and branch warehouses in Atlanta and Dallas, has been appointed manufacturer's agent to handle and promote the sale of United States electrical tools in the 14 southern states.

PARIS, TENN.—E. P. Orr has secured a franchise to establish a Willys-Overland dealership here.

With the Associations

Dealers Protest Law

PORTLAND, Ore., June 27.—The Automotive Dealers' Association of Portland, in a statement signed by H. W. Roberts, president of the group, has filed protest against the interpretation placed on the new Oregon commercial vehicle tax law, which now is said to add an extra impost on practically every type of vehicle used on the highways for other than exclusively pleasure purposes.

The measure to draw the fire of the dealer group is chapter 363 of the general laws of Oregon, passed as house bill 21 at the last session of the legislature during the winter.

This measure originally was intended to impose 50 per cent additional license fee on vehicles being used for wholesale and retail delivery. But instead of confining the fee collection to trucks and delivery cars, the law now is interpreted to include passenger cars used by salesmen, or passenger cars used for any commercial purpose whatever, the auto group avers.

Hints of possible legal action, to submit the measure to the scrutiny of higher courts, were made in the discussion of the situation.

Accessory Men Meet

PHILADELPHIA, June 27.—The Automobile Accessories Business Association held its annual outing and dinner at Betzwood Inn Farms, Betzwood, recently, starting from Spring Garden and Broad street at 9:30 in the morning in automobiles headed by buglers. There were 36 cars in line, all gaily decorated with pennants and American flags. Arrived at the grounds there were baseball games for members and guests, a quoit pitching contest and other athletic events. Luncheon was served at 12:30 and dinner at 6, was followed by a vaudeville entertainment and music by an orchestra.

Bus Operators Elect

ST. LOUIS, Mo., June 27.—Four directors were elected at the second meeting of the Motorbus Operators' Association of Missouri held in the offices of the Kardell Motor Car Co., Reo distributors here.

A constitution and by-laws submitted by Robert E. Lee, manager of the St. Louis Automobile Dealers' Association was adopted. A membership fee of \$25 and dues of \$25 per year were established for members of the association.

The new directors are: B. V. Steinmetz, Farmington-St. Louis Motor Coach Co.; Fred Bauer, Pacific-St. Louis Bus Co.; J. R. Moore, Moore Coach Line and J. R. Delaney, Old Trails Bus Co.

The Old Trails Bus Co. and the Midwest Auto Travel Co., joined the association.

COLE WINS IN BALTIMORE GOLF

BALTIMORE, June 27.—With a gross score of 82, beating Howard Ford by two strokes, Tom Cole has again won the highest honors in the monthly golf tournament held by the Baltimore Automobile Trade Association. Low net score in Class A was made by Jack Horner with a 67 after deduction of a 24 handicap. Low gross honors in Class B were won by A. J. Hunter, 89, and low net by William L. Duck, 66. Walter Kneip won Class C with low gross of 104 and A. M. Eastwick's 50 won low net honors in this class.

Convention Planned

HARRISBURG, Pa., June 27.—The fifth annual business convention and frolic of the Pennsylvania Automotive Trade Association will take place in Pittsburgh, October 12, 13, 14. Full details of the business, entertainment and banquet program will be broadcast to every automotive merchant in the state. More than 1,000 members will attend the discussions and addresses by nationally recognized leaders of every phase of this business and to enjoy the "big town" entertainment that the Pittsburgh Automobile Trade Association is arranging. Among many other features will be a meeting of the officials and secretaries of each and every local dealers' association in Pennsylvania.

Arrange to Test Lights

ST. LOUIS, Mo., June 27.—The St. Louis Automobile Dealers' Association has made arrangements with the Nelson Motor Car Maintenance Co., 3337 Lawton avenue for free testing of automobile lights for the police department and all dealer members. A standard test board has been installed in the Nelson Garage. Dave G. Nelson, head of the company will test lights for all persons sent to him by the police and dealers may send new and used cars to him.

Robert E. Lees, manager of the association, said his organization was taking this method as a means of reducing the number of arrests for illegal lights.

A demonstration of the testing system was made by Jesse H. Phelps, illuminating engineer for the Minneapolis Electric Lamp Co., of Minneapolis, Minn., aided by Dave Nelson. Carl H. Christine, safety engineer of the St. Louis Safety Council, Lee and a delegation from the police motorcycle squad attended. A number of cars showing a variety of lighting equipments were placed on the test range and lights were adjusted by experts.

Kearney Heads Club

MONTREAL, June 27.—W. P. Kearney has been elected director of the Automotive Booster Club of Montreal. Mr. Kearney is vice-president of the Dominion Chain Company, Ltd., manufacturers of the Weed chains and bumpers. He also is chairman of the "On to Montreal" committee for the 1926 A. E. A. Summer convention.

Syracuse Dealers Celebrate

SYRACUSE, N. Y., June 27.—Members of the Syracuse Automobile Dealers' Association held their annual picnic at Bayshore Inn, Oneida Lake last week with dealers from Utica, Cortland, Auburn and other nearby cities as guests. An "athletic" program and stunts followed by a chicken dinner made the event an enjoyable one. C. W. Bull was chairman of the picnic committee which had as other members C. H. Hayes, secretary of the association, J. F. O'Connor, H. Munro Gere, Ed Moyer, George Fonda, Joseph Martlew and B. L. Eskridge.

Advertising Planned

NEW YORK, June 27.—At the last meeting of the National Battery Manufacturers' Association, it was voted to enter into a co-operative advertising campaign on a small scale for the purpose of improving the market situation in the battery field. This matter was given careful consideration, being discussed from all angles.

A committee was appointed, consisting of J. B. Perlman, of the Hartford Battery Company, L. E. Murray of Automotive Electricity, O. B. Towne, the commissioner of the association, and David Beecroft of the Chilton-Class Journal Company, which will have this matter in charge and present a plan at the next meeting.

In order that this work may be put under way and reach the field where the most immediate good may be done, it was voted that the advertising planned be confined to the dealers.

Bus Men to Meet

TORONTO, June 27.—A number of the leading motor truck and bus owners of the Province of Ontario will convene in Toronto soon for the annual meeting of the Ontario Motor Truck Owners' Association. After the election of officers several short addresses will be delivered by authorities on the various phases of motor truck transportation.

Truck Association Outing

PHILADELPHIA, June 27.—The Motor Truck Association of Philadelphia held its annual outing and dinner at the Rifle Club, Old Schuetzen Park, recently.

Battle Over Insurance Rates Is Believed Near Conclusion

Directors of N. A. C. C. Will Consider Plans for Surety Company of Their Own

NEW YORK, June 27.—The decision of the directors of the National Automobile Chamber of Commerce to consider plans for a cooperative insurance company to bring down automobile coverage rates marks the culmination of a long-standing controversy between the manufacturers and the underwriters.

For the last 15 years the automobile producers have been dissatisfied with the existing insurance conditions. In 1914 a movement similar to the present one was launched, and the Manufacturers & Dealers Motor Underwriters, Inc., was organized with two independent insurance companies participating. Internal disagreements brought the enterprise to an early end, but the manufacturers have kept the idea in mind to be brought out again at the opportune moment.

Several recent actions of the underwriters, it is learned, led to the revival of the project by the N. A. C. C. Theft rates on closed cars have been advanced, and although the schedules on open cars were lowered at the same time, the manufacturers feel that the insurance burden has been considerably increased, in view of the large proportion of closed cars in current production.

It was revealed that the underwritings have grievances of their own. Frequent price reductions, made abruptly and without warning, have created a moral hazard, they say, since a purchaser frequently finds himself with a car bought at \$1,500, for example, and insured accordingly, and now listed at \$1250. If such a car can be "stolen" the assured may make \$250 profit.

It was held that the popularity of certain cars with bootleggers had led to an unusual number of thefts of these vehicles and consequently to an advance in the rates. What the rum runner particularly looks for in a car is roomy tonneau space, quick getaway and high speed. All the car rates, it was said, are based on experience tables, and represent the lowest that can be quoted if the insurance companies are to continue in business.

Closed car rates, said the underwriters' spokesmen, were advanced because thieves are finding these models the easiest to dispose of. The lock question, they added, had been agitated for five years, and despite their conviction that the coincidental lock is the best type, its adoption had been deferred again and again in deference to the manufacturers.

Considerable skepticism with regard to the manufacturers' project was expressed by the insurance men.

"They are welcome to the effort," said one underwriter. "The insurance market is free and open. There is a great deal

Coming Motor Events

Automobile Shows

Boston	Oct. 10-17
World's Rubber and Tropical Exposition.	
Dallas, Tex.	Oct. 10-25
Annual Automobile Show, State Fair Automobile Building, under the auspices of the Dallas Automotive Trade Association. J. W. Connell, manager.	
De Pere, Wis.	Aug. 31-Sept. 21
Annual Automobile Show under the auspices of the Automobile Division of the Green Bay Association of Commerce.	
Fresno, Cal.	Sept. 28-Oct. 3
Fresno Motor Car Dealers Association. Fifteenth Annual Show in connection with Fresno District Fair.	
Grand Rapids, Mich.	Sept. 7-12
Grand Rapids Automobile Dealers Association, Seventh Annual Show in connection with West Michigan Fair, Wm. T. Morrissey, manager.	
Oklahoma City, Okla.	Sept. 26-Oct. 3
Annual State Fair and Exposition. Passenger cars and accessories.	
Sacramento, Cal.	Sept. 6-12
Automobile Exhibits in Diamond Jubilee State Fair.	
Shreveport, La.	Oct. 24-Nov. 8
Twentieth Annual State Fair showing passenger cars, trucks and tractors.	
New York	Nov. 15-21
Twenty-first Annual Automobile Salon.	
Wheeling, W. Va.	Sept. 7-12
Wheeling Automobile Dealers Association, Eleventh Annual State Fair, Exposition Building.	
White River Junction, Vt.	Sept. 15-18
Nineteenth Annual Twin State Fair. Passenger cars, trucks and accessories. F. L. Davis, manager.	
Chicago	Jan. 30-Feb. 6
Twenty-sixth Annual National Automobile Show and Eleventh Annual Automobile Salon.	

Foreign Shows

Berlin, Germany	Nov. 26-Dec. 6
Annual Automobile Show in the Kaiserdamm.	
Buenos Aires, Argentina	Oct. 3-13
Pan-American Road Congress.	
London, England	Oct. 8-17
Olympia Passenger Car Show.	
London, England	Oct. 29-Nov. 7
Annual Truck Show.	

Races

Altoona, Pa.	Sept. 7
Belgium	July 5
European Grand Prix Race.	
Charlotte, N. C.	Oct. 24
Fresno, Cal.	Sept. 30
Laurel, Md.	Oct. 10
A. A. A. Race, Baltimore-Washington Speedway.	
Los Angeles, Cal.	Nov. 26
Monza, Italy	Sept. 6
Italian Grand Prix Race.	
Paris Montlhery track	July 26
French Grand Prix.	

Conventions

Buenos Aires, Argentine	Oct. 3-13
Pan-American Road Congress.	
Cleveland	Sept. 14-19
Annual Convention and Exposition of American Society for Steel Treating.	
Cleveland	Sept. 15-16
S. A. E. production meeting and exhibition.	
Des Moines, Ia.	Nov. 12-13
Automotive Merchants' Association Convention.	
Everett, Wash.	July
Annual state convention Washington Automotive Trades Association.	
Montreal, Que.	Oct. 7-10
Fall convention of the Motor and Accessory Manufacturers Association.	
Philadelphia	September
S. A. E. Automotive Transportation meeting.	
Pittsburgh, Pa.	Oct. 12-14
Pennsylvania Automotive Association Convention.	
St. Louis	Nov. 17-19
Annual Convention of National Tire Dealers' Association.	
Tuscaloosa, Ala.	July 20-21
Midsummer meeting of the Alabama Automotive Trades Association.	

SERVICE SECTION TO MOVE

NEW CASTLE, Ind., June 27.—The service department of Maxwell Motor Corporation will be removed from this city to Dayton, O., according to an announcement made by company officers. The transfer will be made to give the company more room in its New Castle plant for its drop forge, transmission, screw machine and axle departments. Considerable production will be done at Dayton in making of parts for Maxwell cars built previous to 1925. All parts will be supplied from the Dayton plant which will do a business estimated at \$5,000,000 to \$6,000,000 annually.

of competition and no company could make large profits for very long. The commercial records are strewn with the wrecks of underwriting companies and if the automobile manufacturers think they can succeed where others have failed, let them by all means make the attempt."

BLACKHAWK CHANGES NAME

In order that the firm name may be in keeping with the trade name of its products, the American Grinder Mfg. Co., Milwaukee, Wis., has changed its name to Blackhawk Mfg. Co. This company has manufactured for years the Blackhawk line of welded wrenches, consisting of fixed and detachable handle socket wrenches, and special service wrenches.

Noise Elimination Features S. A. E. Summer Convention

Lubrication, Steam Cooling, Brakes, Riding Qualities and Transmis- sion Discussed

WHITE SULPHUR SPRINGS, W. Va., June 27.—Noise elimination, lubrication, riding qualities, brakes and transmissions were among the important subjects discussed at the summer meeting of the Society of Automotive Engineers here last week.

Running through many of the sessions in a subsidiary way and receiving major emphasis in one or two instances were the topics of noise elimination and the desirability of a broader conception of commercial problems on the part of the automotive engineers.

T. J. Little, Jr., chief engineer of the Lincoln Motor Co., was nominated for the presidency of the society. The meeting followed the precedent set last year of having numerous demonstrations and exhibits to accompany the various papers.

Experiments in noise measurement were performed, details of bearing lubrication were visualized by motion pictures, and H. L. Horning had an engine in operation to illustrate his ideas on steam cooling.

New standards adopted covered valves, piston pins and battery ratings. The term "motorcoach" also was adopted in preference to "motor bus." The engineers showed a great deal of interest in the possibilities of infinitely variable transmissions, R. M. Heldt, engineering editor of Automotive Industries presenting a paper on developments in this field, but the impression was that in the immediate future attention will be centered on the development of present types.

Steam cooling received considerable attention not only through the discussion initiated by Mr. Horning, but also by the remarks of A. Ludlow Clayden.

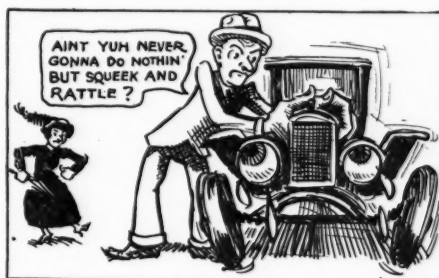
Rice Made Chairman of U. S. Delegation to Road Meeting

WASHINGTON, June 27.—Herbert E. Rice, of Detroit, vice president of General Motors, former president of the Cadillac Company, and at the present time special assistant to President Sloan of General Motors was this week named by President Coolidge to be chairman of the Pan-American Roads Congress Commission, meeting in Buenos Aires, October 3 to 13.

Mr. Rice is succeeding J. Walter Drake, assistant secretary of commerce, who has resigned from the commission. The appointment of Mr. Rice was on the recommendation of Mr. Drake, made just before the latter sailed for Brussels last week as a delegate to the International Chamber of Commerce. He will not return from Europe until the latter part of August and the delegation sails for Latin America on September 3.

SQUEEKS and RATTLES

CALL THE WAGON



Mrs. McNutt: "Why did the Ladies' Aid try to have that man arrested yesterday?"

Mrs. Blab: "The brute choked his car 'till he killed the engine."

PAGE MR. LONGFELLOW

The shades of night were falling fast,
The guy stepped on it and rushed past;
A crash—he died without a sound,
They opened up his head and found

—Excelsior!

—Baltimore Sun.

ETHYL WHAT?

"How far do you get on a gallon?"
"All depends on what's in the gallon."

—Juggler.

- 1: "Say, what is a hubbub?"
- 2: "It's part of a wheel; but don't call me any more nicknames."

—Texas Ranger.

The machine was crossing the railroad track
To beat the train it tried

And they buried the car with the occupants
Because the engine died.

—Carnegie Tech Puppet.

Some open minds should be closed for repairs.

—Williams Purple Cow.

REPAIRS

Judge: "Why did you steal that monkey-wrench and crowbar?"

Prisoner: "I wuz broke yer honor."

Judge (waxing wise): "What do you think you are—an automobile?"

Prisoner (waxing wiser): "No, yer honor—I wanted to mend my ways."

—N. Y. U. Medley.

TWO GOOD METHODS

Here lie two men whom we agree
Have won the cut-glass bonnet;
The first of them blew out the gas;
The other stepped upon it.

—Gas Gazette.

FIFTH ROW CENTER

Motor Cop: "I've a good mind to give you a ticket."

Speeder: "Well, if you must, make it for a musical comedy."

—N. Y. U. Medley.

A CINCH

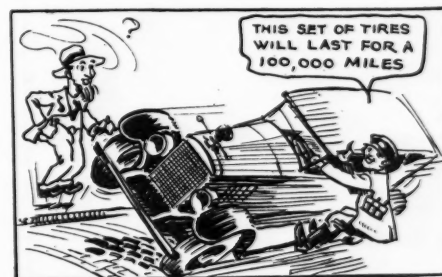
"Take a dollar chance on an automobile?"

"But I don't want one."

"That's all right. You may not get it."

—Hamilton Royal Gaboon.

HE'S NEEDED



"Is your chauffeur economical?"

"Very; he never runs the car on more than two wheels or three cylinders."

—University of Chicago Phoenix.

NEW VELIE DEALERS

MOLINE, Ill., June 27.—New dealers were added to the organization of the Velie Motors Corporation during May as follows:

Iron Mountain Velie Co., Iron Mountain, Mich.; Mr. B. Hall Green, Cambria, Wyoming; Ulrich Velie Service, Massillon, Ohio; Canton Mitchell Co., Canton, O.; L. H. Stenhilber, Montrose, Minn.; Hank Wade Motors, Philadelphia.

North Canton Chevrolet Sales, North Canton, O.; Shields Auto Company, Waseca, Minn.; August J. Biederbick, Grand Meadow, Minn.; Frank A. Pratt, Worthington, Minn.; J. H. Stoner, Logan, Ia.; Marin Velie Co., San Rafael, Cal.; Clarence H. Sackett, Placerville, Cal.; J. B. Harris, Marysville, Cal.

H. A. Hannum, Springfield, Mass.; Kepple Brothers, Brackenridge, Pa.; Hubbard & Wood, Tacoma, Wash.; J. A. Patterson, Carbondale, Ill.—Dealer; E. F. Sensor, Elgin, Ill.; Temple St. Service Garage, Willimantic, Conn.; Bush Auto Sales, East Stroudsburg, Pa.

Fletcher & Ehipple, Wyand, Ill.; Post and Post, Brookfield, Ill.; Knut Mathisen Motor Co., Gardner, Ill.; Royal Motor Sales Co., Gary, Ind.; Julius Spieker, Raymond, Minn.; Michael Swift, Stafford, Conn.

PACKARD EARNINGS CLIMB

DETROIT, June 27.—Net earnings for the Packard Motor Car Co., for March, April and May, the third quarter of the company's fiscal year, in a statement just issued, are \$3,299,385, which exceeds the net earnings for the first half of the company's fiscal year. The total net earnings for the nine months are \$6,254,128. Increased volume of production coupled with a continuing demand for cars points to the probability of 1925 being the most profitable year in the history of the company. The present schedule calls for the shipment of 40 per cent more cars in the fourth quarter than in the quarter recently ended.

Prices and Weights of Current Passenger Car Models

SHIP.	WT. PASS.	BODY STYLE.	PRICE	SHIP.	WT. PASS.	BODY STYLE.	PRICE	SHIP.	WT. PASS.	BODY STYLE.	PRICE	SHIP.	WT. PASS.	BODY STYLE.	PRICE
AJAX				CHANDLER (Cont'd)				DORRIS				HAYNES			
2210	5-p	Touring	\$865	3309	5-p	Coach	\$1,595	4120	4-p	Pasadena Tour.	\$4,150	3295	5-p	Touring	\$1,600
2410	5-p	Sedan	995	3309	5-p	Chummy Sedan	2,045	4115	7-p	Touring	4,150	3650	5-p	Brougham	2,200
ANDERSON "41"				3469	5-p	Met. Sedan	2,195	4198	4-p	Coupe	4,985	3765	5-p	Sedan	2,300
2650	5-p	Touring	\$1,195	3428	5-p	Sedan 4 d.	1,995	4200	5-p	Sedan	5,550	HERTZ			
2675	4-p	Sp. Touring	1,445	3521	7-p	Sedan	2,195	4310	7-p	Sedan	5,800	3860	5-p	Sedan	\$1,695
2925	2-p	Coupe	1,425	3598	7-p	Limousine	\$3,095	DUESENBERG				HUDSON			
2875	5-p	Sedan	1,695	CHEVROLET				Straight "3"				3425	7-p	Phaeton	\$1,250
2925	5-p	Sp. Sedan	1,895	"Superior" (Series K)				3920	3-p	Roadster	\$6,850	3450	5-p	Coach	1,250
"50"				1755	2-p	Roadster	\$525	3700	5-p	Phaeton	6,500	3425	4-p	Brougham 4 d.	1,595
2975	7-p	Touring	1,595	1870	5-p	Touring	525	3920	7-p	Phaeton	6,850	3675	7-p	Sedan	1,795
3200	7-p	Sedan	1,945	2015	2-p	Utility Coupe	715	3980	4-p	Sp. Phaeton	6,850	HUPMOBILE "R" 4			
APPERSON "6"				2110	5-p	Coach	785	-----	4-p	Coupe	7,500	2595	2-p	Roadster	\$1,225
-----	5-p	Phaeton	\$1,575	2220	5-p	Sedan	825	-----	5-p	Sedan	7,700	2705	5-p	Touring	1,225
3100	5-p	Sp. Phaeton	1,650	CHRYSLER "Four"				4350	7-p	Sedan	8,300	2760	2-p	Coupe	1,855
3145	5-p	Coupe	2,050	-----	5-p	Touring	\$895	DU PONT				2875	5-p	Club Sedan	1,375
3470	5-p	Sp. Sedan	2,100	-----	2-p	Club Coupe	995	3300	2-p	Roadster	\$2,600	"E"			
-----	5-p	Brougham	2,050	-----	5-p	Coach	1,045	3550	5-p	Touring	2,600	3050	2-p	Roadster	1,795
-----	5-p	"ST 8"	-----	-----	5-p	Std. Sedan	1,095	3800	7-p	Touring	2,750	3270	4-p	Roadster	1,895
-----	5-p	Sp. Phaeton	1,995	"Six" (112 1/2 in. W. B.)				3550	5-p	Touring Sedan	3,400	3185	5-p	Touring	1,795
-----	3-p	Coupe	2,450	2805	4-p	Roadster	\$1,625	DURANT				3295	2-p	Coupe	2,095
-----	4-p	Brougham	2,450	2780	5-p	Touring	1,895	2800	2-p	Roadster	\$1,080	3295	4-p	Coupe	2,095
-----	5-p	Sedan	2,595	2785	5-p	Phaeton	1,495	3225	5-p	Touring	830	3410	5-p	Sedan	2,195
AUBURN				-----	5-p	Coach	1,545	A-22				JEWETT			
-----	5-p	Touring	\$795	2985	4-p	Brougham	1,895	2800	2-p	Roadster	\$1,080	3025	4-p	Roadster	\$1,630
-----	6-p	Roadster	1,495	3060	5-p	Sedan	1,825	2995	4-p	Coupe	1,160	2835	5-p	Touring	1,205
-----	5-p	Brougham	1,595	3085	5-p	Imperial Sedan	2,085	2505	5-p	Spec. Coupe	1,235	3015	5-p	De Luxe Touring	1,320
-----	5-p	Sedan	1,795	3090	5-p	Crown Sedan	2,195	-----	5-p	Spec. Sedan	1,810	2835	2-p	Bus. Coupe	1,340
"8-88"				(118 1/2 in. W. B.)				2480	5-p	Coach	1,050	3025	5-p	Sedan	1,530
-----	6-p	Roadster	1,975	3225	5-p	Town Car	3,725	-----	5-p	Spec. Coach	1,100	3505	5-p	De Luxe Sedan	1,780
-----	4-p	Sport Roadster	1,975	CLEVELAND "31"				ELCAR				3000	5-p	Coach	1,260
-----	4-p	Club Roadster	2,075	2825	5-p	Touring	\$ 895	-----	5-p	Touring	\$1,095	JORDAN			
-----	4-p	Sport Brougham	2,250	2580	5-p	Sedan	1,195	-----	5-p	Coach	1,195	3330	2-p	Playboy Road.	\$2,575
-----	5-p	Sedan	2,850	"43"				-----	5-p	Sedan	1,395	3340	5-p	Touring	2,575
BARLEY				2750	5-p	Touring	1,095	-----	5-p	Touring	1,295	3450	3-p	Friendly "3"	2,875
-----	5-p	"6" 5-50	-----	2810	5-p	Touring De Luxe	1,195	-----	5-p	Coach	1,395	3625	5-p	Brougham	2,875
2750	5-p	Touring	\$1,895	2910	5-p	Sp. Touring	1,295	-----	5-p	Sedan	1,595	3520	4-p	Victoria	2,775
2800	5-p	Sp. Touring	1,495	3000	5-p	Coach	1,295	-----	5-p	Sedan	1,595	3525	5-p	Sedan	2,975
3100	5-p	Sedan	1,850	3040	5-p	Sedan	1,495	-----	5-p	Sedan	1,595	3470	7-p	Sedan	3,325
3150	5-p	Sp. Sedan	2,250	3190	5-p	Sedan De Luxe	1,695	3700	5-p	Sp. Touring	2,165	3800	7-p	Suburban Sedan	3,375
BUICK				3190	5-p	Sport	1,725	-----	5-p	Sp. Touring	2,265	KISSEL			
-----	5-p	"Standard"	-----	2990	5-p	Brougham	1,545	3000	3-p	Coupe Roadster	2,315	3130	2-p	Speedster	\$1,895
2750	2-p	Roadster	\$1,150	COLE "MASTER"				-----	7-p	Sp. Touring	2,265	-----	2-p	Sp'dster De Luxe	2,185
2920	5-p	Touring	1,175	3675	4-p	Volante Touring	\$2,325	4050	7-p	Sedan	2,765	-----	4-p	Speedster	1,995
2960	2-p	Coupe	1,375	3795	7-p	West. Touring	2,325	4000	5-p	Brougham	2,865	-----	4-p	Sp'dster De Luxe	2,285
3075	4-p	Coupe	1,565	3675	4-p	Aero-Vol. Tour.	2,475	-----	5-p	Sedan	2,265	3530	2-p	Enc. Speedster	2,285
3185	5-p	Dbl. Srv. Sedan	1,475	4055	5-p	Brouette Sedan	3,225	-----	5-p	Sedan	2,265	-----	2-p	Enc. Sp'd'r DeL.	2,785
3245	5-p	Sedan	1,665	4000	7-p	Royal Sedan	3,225	-----	5-p	Sedan	2,265	3190	4-p	Tourster	1,895
3050	5-p	Coach	1,295	4100	7-p	Royal Limousine	3,325	-----	5-p	Sedan	2,265	-----	4-p	Tourster De L.	2,085
"Master"				CUNNINGHAM				2395	5-p	Coach	850	2980	5-p	Phaeton	1,685
-----	5-p	(120 in. W. B.)	-----	4600	7-p	Touring	\$6,300	-----	5-p	Sedan	850	3170	5-p	Phaeton De L.	1,885
3285	2-p	Roadster	1,865	4500	4-p	Sp. Touring	5,800	3325	4-p	Sport Roadster	\$1,950	-----	7-p	Touring	1,785
3465	5-p	Touring	1,895	4700	4-p	Coupe	7,150	3245	5-p	Touring	1,595	3430	4-p	Coupe	2,185
3550	5-p	Sedan	2,225	5000	6-p	Limousine	7,650	3245	4-p	Sp. Touring	2,050	-----	4-p	Coupe De Luxe	2,585
3560	5-p	Coach	1,495	DAGMAR				3245	4-p	Coupe	2,195	3540	5-p	Brougham Sedan	2,250
(128 in. W. B.)				8750	4-p	Roadster	\$3,500	3595	5-p	Sedan	2,285	-----	5-p	Broug. Sed. DeL.	2,685
3485	3-p	Sp. Roadster	1,750	8800	4-p	Sp. Tourer	3,500	3565	5-p	Brougham 4 d.	2,735	4070	7-p	Sedan De Luxe	3,285
3550	5-p	Sp. Touring	1,800	8700	4-p	Phaeton	3,500	-----	5-p	Touring	1,285	4010	7-p	Berline Sed. DeL.	3,385
3610	7-p	Touring	1,625	4200	4-p	Petite Coupe	4,500	2715	5-p	Touring	1,285	3530	5-p	Victoria	2,285
3745	3-p	Country Club	2,075	4200	4-p	Petite Sedan	4,500	2940	5-p	Sedan 4 d.	1,680	-----	5-p	Victoria De Luxe	2,685
3770	4-p	Coupe	2,125	4500	4-p	De Luxe Coupe	4,750	2965	5-p	Brougham	1,760	-----	2-p	Speedster	2,195
3905	5-p	Brougham Sedan	2,850	4700	5-p	Sedan	4,700	FORD				-----	2-p	Speedster De L.	2,485
4080	7-p	Limousine	2,525	4800	7-p	Sedan	4,750	Without Starter and Dem. Rims				-----	4-p	Speedster	2,295
3995	7-p	Sedan	2,425	"6-60"				1369	2-p	Runabout	\$260	-----	4-p	Speedster De L.	2,585
3850	7-p	Town Car	2,925	3100	2-p	Roadster	1,785	-----	2-p	Runabout	\$345	-----	2-p	Enc. Sp'd'r DeL.	2,985
CADILLAC "V-63 Standard Line"				3200	4-p	Sp. Touring	1,785	1494	5-6	Touring	290	-----	4-p	Tourster	2,195
4190	2-p	Roadster	\$3,185	3150	5-p	Touring	1,985	-----	5-6	With Balloon Tires	335	-----	4-p	Tourster De L.	2,385
4280	7-p	Touring	\$3,185	3400	2-p	Coupe	2,845	1644	5-p	Touring	375	-----	5-p	Phaeton	1,985
4200	4-p	Phaeton	3,185	3500	5-p	Sedan	2,345	-----	5-p	With Balloon Tires	400	-----	5-p	Phaeton De Luxe	2,185
4240	5-p	Coach	3,185	DAVIS				1749	2-p	Coupe	520	-----	7-p	Touring	2,085
4610	7-p	Sedan	3,885	2650	4-p	M. o'War Road.	\$1,495	-----	5-p	With Balloon Tires	545	-----	4-p	Coupe De Luxe	2,385
4625	5-p	Landau	3,885	2915	4-p	Legionaire Tour.	1,495	1882	5-p	Sedan, Tudor	580	-----	5-p	Brougham Sedan	2,550
4655	7-p	Std. Imperial	4,010	2750	5-p	Phaeton	1,395	-----	5-p	With Balloon Tires	605	-----	5-p	Broug. Sed. DeL.	2,985
"Custom Built"				-----	5-p	Sedan	1,595	1927	5-p	Sedan, Fordor	660	-----	7-p	Sedan De Luxe	3,485
(132 in.)				3070	5-p	Imperial Sedan	1,795	-----	5-p	With Balloon Tires	685	-----	7-p	Berline Sed. DeL.	3,385
4260	2-p	Coupe	3,975	3065	5-p	Berline Sedan	1,995	FRANKLIN				-----	4-p	Coupe	2,485
(138 in.)				2700	5-p	Brougham	1,595	2800	3-p	Sport Roadster	\$2,800	-----	4-p	Coupe De Luxe	2,385
4400	5-p	Coupe	4,350	"91"				2845	3-p	Touring	2,650	-----	5-p	Brougham Sedan	2,550
4490	5-p	Sedan	4,550	2835	4-p	Roadster	1,795	2965	3-p	Coupe	2,700	-----	5-p	Broug. Sed. DeL.	2,985
4590	7-p	Suburban	4,650	3020	5-p	Phaeton	1,695	3080	5-p	Sedan	3,850	-----	5-p	Sedan De Luxe	3,485
4655	7-p	Imp. Suburban	4,950	3050	5-p	Brougham	1,895	3175	5-p	Sedan	\$2,200	-----	7-p	Berl. Sed. De L.	3,585
CASE				-----	5-p	Sedan	1,895	3080	5-p	Sport Sedan	3,350	-----	7-p	Victoria	2,585
3260	3-p	Roadster	\$1,840	-----	5-p	Imperial Sedan	2,095	3275	7-p	Limousine	3,500	-----	7-p	Victoria De Luxe	2,985
3290	5-p	Touring	1,885	3215	5-p	Berline Sedan	2,205	3135	7-p	Cabriolet	4,400	LEXINGTON			
3470	5-p	Sp. Touring	2,160	DIANA "St. 8"				-----	5-p	Touring	1,395	-----	5-p	Touring	\$1,595
3970	4-p	Sub. Coupe	2,480	-----	5-p	Roadster	\$1,895	2680	5-p	Coupe	\$1,275	-----	5-p	Touring (Enc.)	1,695
3640	5-p	Sedan	2,590	-----	5-p	Phaeton	1,895	2895	5-p	Sedan	1,475	-----	5-p	Spec. Touring	1,795
3650	5-p	Brougham	2,590	-----	5-p	Std. Sedan	1,995	3070	5-p	Sp. Sedan	1,595	-----	5-p	Sedan	2,185
"X"				-----	5-p	De Luxe Sedan	2,195								

Prices and Weights of Current Passenger Car Models

SHIP.
WT. PASS. BODY STYLE. PRICE

LINCOLN (Cont'd)			
4655	4-p	Phaeton	\$4,000
4655	4-p	Sport Touring	4,500
4655	4-p	Coupe	4,600
4775	4-p	Sedan	4,800
4825	5-p	Sedan	4,900
4865	7-p	Sedan	5,100
4945	7-p	Limousine	5,300

LOCOMOBILE "48"			
5280	4-p	Sportif Tour	\$ 7,460
5330	7-p	Touring	7,460
5630	5-p	Victoria Sedan	10,050
5464	7-p	Brougham	10,040
5640	7-p	Touring Lim.	9,500
5868	7-p	Enc. Drive Lim.	10,050
5600	7-p	Cabriolet	10,300

"J-8"			
.....	2-p	Roadster	2,150
.....	5-p	Touring	1,785
.....	5-p	Sedan	2,285
.....	5-p	Brougham	2,285

McFARLAN "6"			
"SV"			
3700	2-p	Roadster	\$2,650
.....	2-p	Spec. Roadster	2,900
3600	5-p	Touring	2,650
.....	7-p	Touring	2,750
.....	4-p	Coupe	3,180
3850	5-p	Sedan	3,180
.....	5-p	Spec. Sedan	3,180
3850	7-p	Sedan	3,280
.....	5-p	Sub. Sedan	3,380
.....	7-p	Sub. Sedan	3,480
.....	5-p	Brougham 4 d.	3,180

"TV"			
4000	2-p	Roadster	\$5,400
4600	4-p	Sp. Touring	5,600
4900	4-p	Coupe	6,720
5200	4-p	Tour. Sedan	6,720
5200	7-p	Tour. Sedan	6,810
.....	6-p	Sedan	6,720
.....	7-p	Sedan	6,810
.....	7-p	Spec. Sedan	6,810
.....	7-p	Enc. Sedan	7,110
.....	7-p	Sub. Sedan	7,110
5200	7-p	Town Car	9,000

MARMON "74"			
3695	2-p	Roadster	\$3,165
3604	5-p	Phaeton	3,165
3704	7-p	Touring	3,165
3604	5-p	Club Phaeton	3,465
3704	7-p	Club Touring	3,465
3799	5-p	Brougham Coupe	3,295
3729	3-p	Coupe De Luxe	3,455
3869	5-p	Sedan	3,295
3859	5-p	Sedan De Luxe	3,775
3999	7-p	Sedan	3,370
3974	7-p	Sedan De Luxe	3,850
3969	5-p	Sedan Limousine	3,900
3999	7-p	Sedan Limousine	3,975

MERCER "6"			
3860	3-p	Runabout	\$4,500
3950	6-p	Touring	4,500
3900	4-p	Sporting	4,500
4070	4-p	Coupe	6,250
4240	5-p	Sport Sedan	6,250
4350	4-p	Tour. Limousine	6,500
4300	4-p	Brougham	6,500

MOON Series "A"			
2440	5-p	Roadster	\$1,395
2625	3-p	Cab. Roadster	1,695
2460	5-p	Touring	1,295
2710	5-p	DeL. Sedan 2d.	1,695
2850	5-p	Sedan 4 d.	1,595
2850	5-p	DeLuxe Sedan 4d.	1,785

Newport			
2760	5-p	Touring	1,495
2920	5-p	Sedan	1,815
3090	5-p	Petite Sedan	1,915

Metropolitan			
2860	5-p	Touring	1,515
3020	5-p	Sedan	1,995
3190	5-p	Sp. Sedan	2,095

London			
3270	5-p	Sp. Touring	1,985
3590	5-p	Petite Sedan	2,540

NASH "Special"			
2870	2-p	Roadster	\$1,095
2960	5-p	Touring	1,095
3120	5-p	Sedan	1,225
3270	5-p	Sedan 4 d.	1,545

"Advanced" (121 in. W. B.)			
3320	3-p	Roadster	1,375
3400	5-p	Touring	1,375
3550	5-p	Sedan 2 d.	1,485

"Advanced" (127 in. W. B.)			
3480	7-p	Touring	1,525
3640	4-p	Victoria	2,090
3750	5-p	Coupe 4 d.	2,190
3830	7-p	Sedan	2,290

SHIP.
WT. PASS. BODY STYLE. PRICE

OAKLAND "6-54"			
2420	3-p	Roadster	\$1,095
2510	3-p	Sp. Roadster	1,195
2485	5-p	Touring	1,095
2550	5-p	Sp. Touring	1,195
2620	5-p	Coach	1,215
2620	3-p	Landau Coupe	1,295
2720	4-p	Coupe	1,495
2700	5-p	Sp. Sedan	1,375
2860	5-p	Sedan	1,545
2885	5-p	Landau Sedan	1,645

OLDSMOBILE "30"			
2145	2-p	Roadster	\$ 890
2270	2-p	Sp. Roadster	985
2200	5-p	Touring	890
2360	5-p	Sp. Touring	1,015
2330	2-p	Bus. Coupe	1,045
2460	4-p	Coupe	1,175
2410	5-p	Coach	1,075
.....	5-p	De Luxe Coach	1,150
2570	5-p	Sedan	1,285
2740	5-p	De Luxe Sedan	1,375

OVERLAND "91" 4 (100 in. W. B.)			
1919	5-p	Touring	\$495
.....	2-p	Coupe	635
2205	5-p	Sedan De Luxe	715
2202	5-p	Std. Sedan 2 d.	655

(112 3/4 in. W. B.)			
2443	5-p	Sta. Sedan	895
2584	5-p	Sedan De Luxe	1,150

PACKARD "6" (126 in. W. B.)			
3643	4-p	Roadster	\$2,785
3653	5-p	Touring	2,585
3595	4-p	Sp. Touring	2,750
3753	4-p	Coupe	2,585
3876	5-p	Coupe	2,685
3937	5-p	Sedan	2,585
3974	5-p	Sedan Limousine	2,885
(133 in. W. B.)			
3793	7-p	Touring	2,785
4043	7-p	Sedan	2,785
4143	7-p	Sedan Limousine	2,885

(136 in. W. B.)			
4060	4-p	Runabout	3,950
4090	5-p	Touring	3,759
4023	4-p	Sp. Touring	3,900
4242	4-p	Coupe	4,650
4337	5-p	Coupe	4,825
4528	5-p	Sedan	4,750
4535	5-p	Sedan Limousine	4,850
(143 in. W. B.)			
4199	7-p	Touring	3,950
4655	7-p	Sedan	5,000
4710	7-p	Sedan Limousine	5,100

PAIGE "21-24"			
3875	4-p	Phaeton	\$2,165
3935	7-p	Phaeton	2,165
3975	5-p	Brougham	2,195
4050	5-p	Broug. De Luxe	2,395
4325	7-p	Sedan De Luxe	2,840

PEERLESS "6-72" (126 in. W. B.)			
3175	5-p	Touring	\$1,895
3425	5-p	Coupe	2,495
3500	5-p	Sedan	2,565

(133 in. W. B.)			
3,275	7-p	Touring	1,995
3300	2-p	Roadster	2,285
3700	7-p	Sedan	2,765
3825	7-p	Limousine	2,925
"8-67"			
3950	4-p	Phaeton	2,945
3995	7-p	Phaeton	2,990
4300	5-p	Town Brougham	3,895
4310	5-p	Town Sedan	3,895
4400	7-p	Sub. Sedan	3,995
4525	7-p	Berline Lim.	4,195
4100	4-p	Victoria Coupe	3,545
4155	5-p	Sub. Coupe	3,595

PIERCE-ARROW "33"			
4350	2-p	Runabout	\$5,250
4500	4-p	Touring	5,250
4590	7-p	Touring	5,250
4730	3-p	Coupe	6,800
4800	4-p	Sedan	6,900
4960	7-p	Sedan	7,000
4750	4-p	Coupe Sedan	6,900
4730	6-p	Brougham	6,800
4850	7-p	Limousine	7,000
5060	7-p	Enclosed Lim.	7,000
4780	7-p	French Lim.	7,000
4730	6-p	Landaulet	7,000

"80"			
3205	2-p	Roadster	2,895
3260	4-p	Phaeton	3,095
3385	7-p	Phaeton	2,895
.....	5-p	Coach	3,150
3365	4-p	Coupe Landau	3,820
3335	4-p	Coupe	3,695
3440	5-p	Sedan	3,895
3560	7-p	Sedan	3,995
3615	7-p	Enc. Drive Lim.	4,045

SHIP.
WT. PASS. BODY STYLE. PRICE

REO "T-6"			
3350	3-p	Sp. Roadster	\$1,765
3182	5-p	Sp. Touring	1,595
3350	2-p	Coupe	1,645
3450	4-p	Coupe	1,975
3400	5-p	Sedan 4 d.	1,645
3545	5-p	Sedan	2,085
3705	5-p	Brougham 4 d.	2,235

REVERE "25"			
3900	2-p	Sp. Roadster	\$2,750
3975	4-p	Speedster	2,750
4050	5-p	Touring	2,750
4300	5-p	Sedan	3,800
"M"			
3700	2-p	Roadster	3,200
3300	4-p	Sportster	3,200
3970	5-p	Touring	3,200
4400	5-p	Sedan	4,000

RICKENBACKER "Six" (117 in. W. B.)			
.....	3-p	Roadster	\$1,595
.....	5-p	Phaeton	1,495
.....	3-p	Coupe Roadster	1,695
.....	4-p	Coupe De Luxe	1,820
.....	5-p	Spec. Sedan	1,995
.....	5-p	De Luxe	1,775
.....	7-p	Sedan De Luxe	1,920
.....	5-p	Coach Brougham	1,595
.....	5-p	De Luxe	1,720

"Eight" (121 1/2 in. W. B.)			
.....	3-p	Roadster	1,995
.....	5-p	Phaeton	1,995
.....	3-p	Coupe Roadster	2,095
.....	3-p	De Luxe	2,220
.....	5-p	Spec. Sedan	2,195
.....	5-p	De Luxe	2,320
.....	7-p	Sedan De Luxe	2,470
.....	5-p	Coach Brougham	1,995
.....	5-p	De Luxe	2,120

ROAMER "6-54-E" (118 in. W. B.)			
3100	2-p	Roadster	\$2,685
3100	4-p	Tourer	2,485
3300	4-p	Sp. Touring	2,750
.....	7-p	Touring	2,685
.....	3-p	Cabriolet	3,285
(138 in. W. B.)			
4100	5-p	Spec. Sedan	4,250
4200	7-p	Suburban Sedan	3,950

"4-75-E"			
3600	4-p	Sport	3,650
3200	2-p	Spec. Speedster	3,785

ROLLIN			
2360	5-p	Touring	\$1,155
2405	3-p	Coupe	1,325
2595	5-p	Brougham	1,325
2575	5-p	Sedan	1,455

ROLLS-ROYCE			
.....	Chassis	††

††Manufacturers do not quote list prices.

STANLEY "252"			
3400	5-p	Phaeton	\$2,500
3800	5-p	Sedan	3,300

Mechanical Specifications of Current Passenger Car Models

This list comprises cars distributed on a national basis

MAKE AND MODEL										ENGINE										ELECTRICAL SYSTEM										REAR AXLE		BRAKES		Steering Gear—Make		Rear Springs—Type and Length		Chassis Lubrication—Type and Make		ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Wheel Base (Inches)										Tire Size										Decimals—Balloons										Make and Model										Bore and Stroke										Piston Displacement										Valve Arrangement										Camshaft Drive										Crankcase In-terior Sep.										Piston Material										No. Main Bearings										Oil Cleaner?										Cooling System										Thermostat?										Carburetor										Air Cleaner?										Ignition System										Generator and Starter Make										Clutch—Type and Make										Gear Set—Make										Universal—Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and Make										Type and 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Brake Troubles

That Trouble the Dealer

The fundamental weakness of mechanical brakes is beginning to make itself felt.

The mechanical four-wheel brake jobs are beginning to develop the troubles, and the rattles, which are the inevitable accompaniment of so many scores of rods and toggles and other parts.

Always difficult to equalize, and always impossible to keep equalized for any worth-while length of time, mechanical four-wheel brakes, after several months of use, now present more difficulties in this respect than ever.

The damaging part of all this is the fact that the owners of these mechanical four-wheel

brake cars are beginning to compare notes with the owners of the tens of thousands of Lockheed hydraulic four-wheel brake equipped cars.

They are learning that hydraulic brakes are easily equalized; that they retain their equalization indefinitely; that hydraulic brakes do not develop squeaks and rattles because they are so simple, because there is nothing to squeak and rattle, nothing to come loose.

It's no wonder that, as the months pass, more and more dealers are being influenced by the public demand, toward cars which are equipped with Lockheed Hydraulic Four-Wheel Brakes.

HYDRAULIC BRAKE COMPANY
5835 Russell Street Detroit, Michigan

The Answer
LOCKHEED HYDRAULIC
Four Wheel Brakes

(This list comprises cars distributed on a national basis)

MAKE AND MODEL			ENGINE										ELECTRICAL SYSTEM			Clutch—Type and Make			Gear Set—Make			Universal—Type and Make			REAR AXLE			BRAKES			Steering Gear—Make			Rear Springs—Type and Length			Chassis Lubrication—Type and Make			ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS		
Wheel Base (Inches)	Tire Size	Decimals-Balloons	Make and Model	Number of Cyls.	Rated H.P.	Piston Displacement	Valve Arrangement	Crankshaft Drive	Crankcase In-ter. or Sep.	Piston Material	No. Main Bear.	Oiling System	Oil Cleaner?	Cooling System	Thermosist?	Carburetor	Air Cleaner?	Ignition System	Generator and Starter Make	Clutch—Type and Make	Gear Set—Make	Universal—Type and Make	Type and Make	Gear Ratio	Foot—Type and Location	Hand—Type and Location	Wheel Type	Steering Gear—Make	Rear Springs—Type and Length	Chassis Lubrication—Type and Make	ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS											
124	30x5.70	70	Over... 8-11x4	25.3	38.8	I	I	He.	Int.	C.I.	9	P.F.	F	Pu.	N	Str.	N	DeJo.	DeJo.	P.Own.	Own.	Own.	m-Mec.	1/2	4.77	E-F	E-R	M	Ross.	S	Pr-Ze	A-K—Atwater Kent A-L—Auto-Lite A-M—Adams A-N—Adams A-O—Ansted A-P—Borg & Beck A-Q—Brown-Lie A-R—Ball & Ball A-S—Basic cups A-T—Bijur A-U—Bowen Products A-V—Carver A-W—CAS Products A-X—Cleveland A-Y—Climax A-Z—Continental A-1—Conn. A-2—Columbia A-3—Campbell A-4—Delon A-5—Detroit A-6—Ditweiler A-7—Dot A-8—Duesenberg A-9—Durno A-10—Durno A-11—Dyneto A-12—Eat-Eaton A-13—Flint A-14—Ful-Fuller A-15—Gem-Gemmer A-16—Hoe-Hoosier A-17—Jac-Jacox A-18—John-Johnson A-19—King-Kingston A-20—L-N A-21—Levine A-22—Lynch A-23—Lycoming A-24—Mar-Merch A-25—M&E A-26—Mechanics Machine Co. A-27—Mon-Monson A-28—Mun-Muncie A-29—N-E A-30—North East A-31—Nor-Norway A-32—Pet-Peters A-33—Ray-Rayfield A-34—Rock-Rockford A-35—S-Sal A-36—Salisbury A-37—Sch-Schleber A-38—Snead A-39—Spe-Special A-40—Spe-Special Make A-41—Spl-Splitor A-42—St-Stewart A-43—St-Sterling A-44—Str-Strambach A-45—Th-Thomson A-46—Tim-Timken A-47—Til-Tillotson A-48—U-Universal A-49—W-G—Warner Gear A-50—W-Warner A-51—Wes-Westinghouse A-52—Wis-Wisconsin A-53—Ze-Zerk A-54—Zen-Zenith										

The blunt truth about motor cars is this:

THE Cadillac gives results and possesses qualities which are not combined in any other car.

These elements of superiority, which unite to produce the greatness attaching to Cadillac alone, center chiefly in the following qualities:—

Balance

The smoothness of the Cadillac V-type engine is equaled only by the rotation of a finely balanced flywheel.

For Cadillac, by reason of unique and exclusive balance disposes of vibration by canceling or neutralizing the alternating unbalanced forces which set up vibration. This is possible only with the short stiff Cadillac crankshaft, which does not permit torsional vibration found in otherwise balanced engines of other types.

The result is a degree of what the motorwise describe as "sweetness" and "smoothness" that makes all other motors rough when compared with Cadillac.

Carburetion

This is a big problem in all multi-cylinder motors—except Cadillac. The short cylinder blocks of the Cadillac V-type engine, the division of the eight cylinders into two equidistant groups with a very short intake passage from the carburetor, conduce to accurately uniform distribution of gas.

The thermostatic control of the Cadillac carburetor automatically regulates the gas mixture in relation to temperature.

The result is unvarying flow of power, alert acceleration and economy. Cadillac power, in engineering language, most nearly possesses theoretically perfect torque.

Cooling

Here, Cadillac again presents features exclusive to itself—two short cylinder blocks, each with its own water inlet and outlet connections to the radiator, and thermostatic control of water circulation.

Regardless of climatic conditions, the Cadillac V-type engine provides for accurate equalization of heat, and maintains the most efficient working temperature.

The results are quick responsiveness and smooth power, when the engine is started cold, and enduring hill-climbing ability.

Only Cadillac's experience of 11 years in eight-cylinder production, only Cadillac design and only the Cadillac standard of craftsmanship have found the ultimate solution of these eight-cylinder problems.

Hence, only Cadillac gives an equal degree of performance and lifetime dependability

CADILLAC

Division of General Motors Corporation



Announcing the **HASSLER**

FOR CHEVROLET, HUDSON, ESSEX, OVERLAND,

AFTER eleven years of concentration on the single problem of controlling spring rebound, the Hassler organization is ready to announce a new **STABILIZER** for motor cars, built on engineering principles as far in advance of past spring control and snubbing devices as the balloon tire is advanced over the regular tire.

THIS IS THE ONE DEVICE TO USE ON CARS WITH BALLOON TIRE EQUIPMENT.

As rapidly as possible models will be fitted to all the popular makes of cars. At present, **HASSLER STABILIZERS** are available for Chevrolet, Dodge, Hudson, Essex, Overland and Buick automobiles.

The Only

SPRING CONTROL DEVICE of its kind that is sealed against mud, water, dirt, grit and other destructive elements. The connecting belt is never drawn into the internal mechanism.

The Only

SPRING CONTROL DEVICE of its kind with quick recovery of flexible member—extremely important with balloon tires. Even the slightest bump is smoothly controlled.

The Only

SPRING CONTROL DEVICE of its kind giving control by means of **SMOOTH FRICTION** as opposed to rough friction. This guarantees smooth, easy and quick action at all times.

The Only

SPRING CONTROL DEVICE of its kind made in a separate model for each make of car and individualized to simplify the problems of the Service Station handling that car.

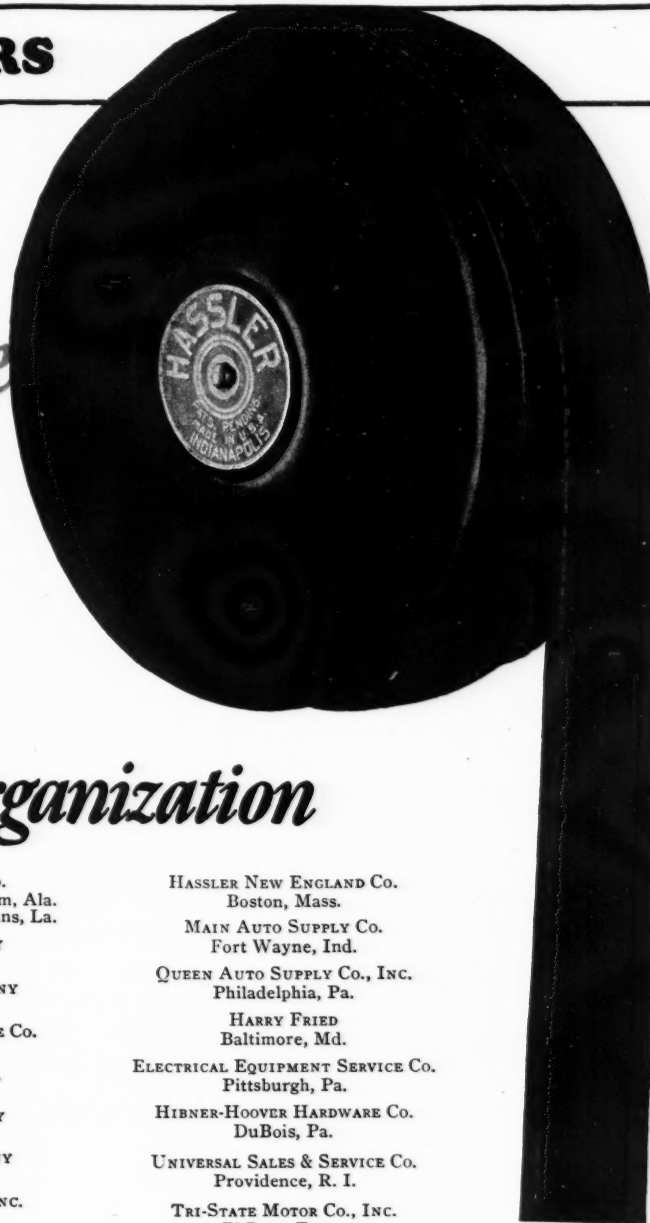
Nearly 2,000,000 Motor Cars

Stabilizer

DODGE AND BUICK CARS

Hasslers make Balloon Tires Behave

If you are selling or servicing Chevrolet, Dodge, Hudson, Essex or Buick cars—the HASSLER STABILIZER will make money for you. Fronts and rears packed separately. Every set adjusted at the factory for the make of car it is to be used on. Illustrated instructions with each set. A simple, practical proposition, backed by America's largest shock absorber factory. Write for details, either direct to us or to the nearest member of our



Distributing Organization

HASSLER PACIFIC COMPANY
San Francisco, Cal. Los Angeles, Cal.
Seattle, Wash.

HASSLER COLORADO COMPANY
Denver, Colo.

HASSLER OKLAHOMA COMPANY
Oklahoma City, Okla.

HASSLER TEXAS COMPANY
Dallas, Texas Houston, Texas
San Antonio, Texas

HASSLER NEBRASKA COMPANY
Omaha, Neb.

HASSLER MISSOURI-KANSAS CO.
Kansas City, Mo.

HASSLER ST. LOUIS COMPANY
St. Louis, Mo.

HASSLER MINNESOTA COMPANY
Minneapolis, Minn.

HASSLER SOUTH-EAST CO.
Memphis, Tenn. Birmingham, Ala.
Atlanta, Ga. New Orleans, La.

HASSLER-NEFF COMPANY
Milwaukee, Wis.

HASSLER CHICAGO COMPANY
Chicago, Ill.

BRYCE AUTOMOBILE SERVICE CO.
Indianapolis, Ind.

HASSLER KENTUCKY CO.
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HASSLER OHIO COMPANY
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HASSLER TOLEDO COMPANY
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HASSLER SALES AGENCY, INC.
Richmond, Va.

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Newark, N. J. Buffalo, N. Y.
New York City, N. Y.

HASSLER NEW ENGLAND CO.
Boston, Mass.

MAIN AUTO SUPPLY CO.
Fort Wayne, Ind.

QUEEN AUTO SUPPLY CO., INC.
Philadelphia, Pa.

HARRY FRIED
Baltimore, Md.

ELECTRICAL EQUIPMENT SERVICE CO.
Pittsburgh, Pa.

HIBNER-HOOVER HARDWARE CO.
DuBois, Pa.

UNIVERSAL SALES & SERVICE CO.
Providence, R. I.

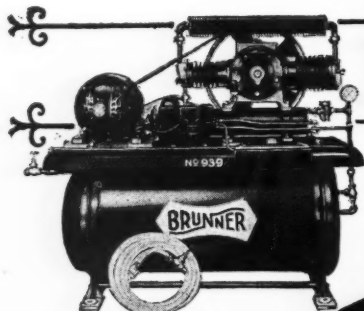
TRI-STATE MOTOR CO., INC.
El Paso, Texas

LARRY W. SHILLOCK
Des Moines, Iowa

ROBERT H. HASSLER, Inc. • INDIANAPOLIS, U. S. A.

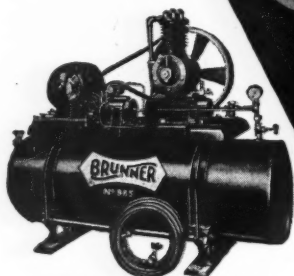
ROBERT H. HASSLER, Limited, Hamilton, Canada

Ride Easier Because of HASSLERS

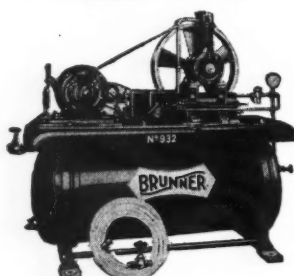


BRUNNER MODEL
Assembled Unit 939
A two stager

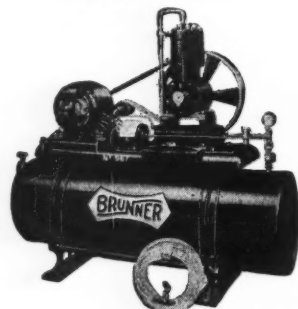
BRUNNER
MODEL
ASSEMBLED
UNIT
965



BRUNNER MODEL
ASSEMBLED
UNIT 932



BRUNNER MODEL
ASSEMBLED
UNIT 967



Dependable

BRUNNER AIR SERVICE

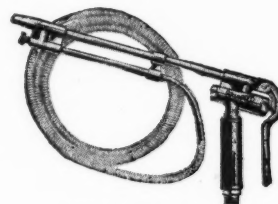
DEPENDABLE air service is a business builder and a source of profit in the shop.

Brunner equipment is made with the finest materials—selected because they have proven by thorough test to be DEPENDABLE.

Brunner equipment is DEPENDABLE because it is made by pioneers—the oldest and largest manufacturers of garage air compressors in the world. *You can buy cheaper air compressors, but not better ones.*

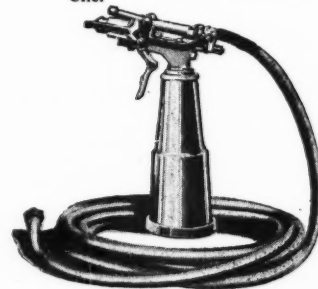
BRUNNER MFG. COMPANY
UTICA, N. Y.

CINCINNATI KANSAS CITY SAN FRANCISCO



BRUNNER ENGINE
CLEANER No. 78

The greatest garage tool on the market. No garage or service station can afford to be without one.



BRUNNER PAINT
SPRAYER

Flat spray, designed especially for Duco and other Pyroxalin finishes. Easy to hold without tiring. Absolutely leakproof.



Dept. M. A.
BRUNNER
MFG. CO.,
Utica, N. Y.

Gentlemen:
Please send me a copy
of "Air Profits."

Name.....

Address.....

Jobber's name.....

Address.....

It's Your Harvest-time!



Tourists. Regular customers. Increased driving. Stop more folks with a good-looking pump and an attractive oil outfit—and then sell 'em accessories, minor repairs!

It's just that much more profit to you—and doesn't add to your operating expense.

Bowser engineers can tell you how to do it—just as they've told hundreds of other dealers and garage-men how to make more money. Write Dept. 14 for complete details of "How to Sell More Gas and Oil."

FREE

Bowser has several helps to larger sales, as illustrated here—booklets that tell how to sell more gas and oil; capacity cards showing how much gas and oil cars need; and other similar helps to bigger profits. Get them. Use them. Write Today!

Here are the sales-increasing helps now available

S.F. BOWSER & COMPANY, Inc.
Pump and Tank Headquarters
FORT WAYNE, INDIANA.
Sales and Service Offices and Representatives Everywhere

Every Dealer Should Have One!

We want you to know how this Aermore demonstrator stand puts more life—action—volume into Aermore sales. You should have it on your counter. If you do not have one, by all means ask for it at once and let Aermore Horns increase your July and August profits.

When customers come in they'll blow the Aermore—demonstrate it for themselves. Then you'll hear them say, "Man, that's some horn. I want one of those." They've seen it advertised in the Saturday Evening Post and other magazines. They're ready to buy—and the tone sells them, every time.

Any automotive dealer can get the Aermore demonstrator at once, without

delay, can have the additional business this demonstrator will bring, by merely, giving your jobber an order for six Aermore Horns, any size.

The initial investment is small. The profits are sure and satisfactory. And the Aermore renders service for years. It is one product that is sure to give your customers absolute satisfaction.

Aermore Horns have no "summer lull." Touring time is Aermore time. Aermore is the signal that opens the road with a pleasant, melodious tone. Let it open the road for you—to greater profits.

The coupon below will bring full information about Aermore discounts and the Aermore demonstrator

Price complete with Valve and Hand Control

Five Sizes	No. 000 Extra deep tone	\$16
	No. 00 22 in. length, for large cars....	14
	No. 0 17 in. length, for medium cars....	12
	No. 1 15 in. length, for small cars....	10
	Ford Special, 13 in. length.....	7

Specify make and model of car when ordering.



THE FULTON CO.
755 - 75th Ave., Milwaukee, Wis.
Automotive Equipment
Pace Setters of Quality

This Aermore Demonstrator
(List Price \$10) **SUPPLIED FREE**
With Assortment of Six Horns



Use This Coupon

CAUTION: For the protection of the trade we must know that you are entitled to discounts before quoting. Therefore if you do not use the coupon be sure to give us your jobber's name.

THE FULTON COMPANY,
738-75th Avenue, Milwaukee, Wisconsin

My jobbers's name is..... Address.....

Send me complete information about Aermore Exhaust Horns and the Aermore Demonstrator.

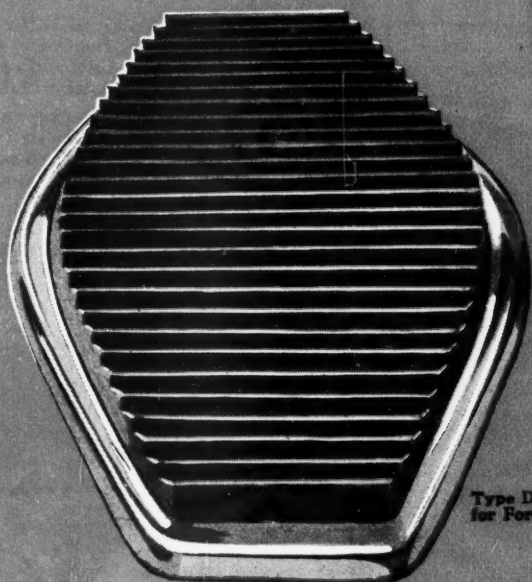
Firm Name.....

Signed.....

Address.....

Sell 'Em Together!

PERFECTION PEDAL PADS



Type DX
for Fords

Known everywhere for safety and comfort. Experienced drivers would not be without them.

Their deep ribbed rubber cushion holds foot firmly—prevents slipping. Adds comfort.

Easily attached and securely held by strong lugs extending out from the back of the nicked frames.

Write your jobber, or us, for full details

Type DX—for Fords. Per set of 3.....	Type D—for Fords. Per set of 3.....	Type D Hook—for Fords. Per set of 3.....
\$1.25	\$1.00	\$1.00

Also in sets of 2 for all standard cars. \$1.00
Per set of 2.....

THE FULTON CO.

738-75th Ave., Milwaukee, Wis.
Automotive Equipment
Pace Setters of Quality

The FULTON ACCELERATOR for FORDS



The only accelerator for Fords with a "safety space" that enables you to sell accelerator and pedal pads to the same customer. 4½ inches from brake pedal. Prevents touching accelerator when applying brake, even with extension pedal pads.

Easily installed; only one nut to loosen slightly. Direct action to carburetor, no lost motion. Smooth-working; dependable. Finished in bright nickel. Complete, including nicked foot rest—\$1.50. Write your jobber, or us, for full details of this and the



New Fulton Display Stand

The sales help that enables you to sell accelerator and pedal pads to the same customer. It brings in the money.

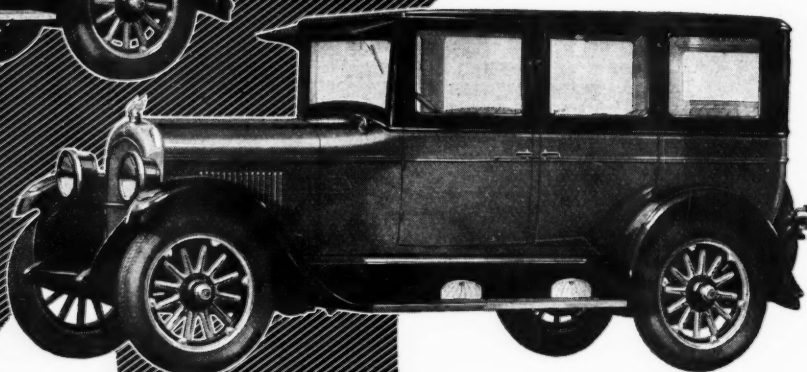
Shows Ford pedals and full foot area around accelerator and pedals. Put Perfection Pedal Pads on the pedals and give your customer an actual demonstration of the safety space between Accelerator and Pads. Also how they improve appearance of his car. Make two sales—two profits instead of one. Ask your jobber or us.

The New CHRYSLER



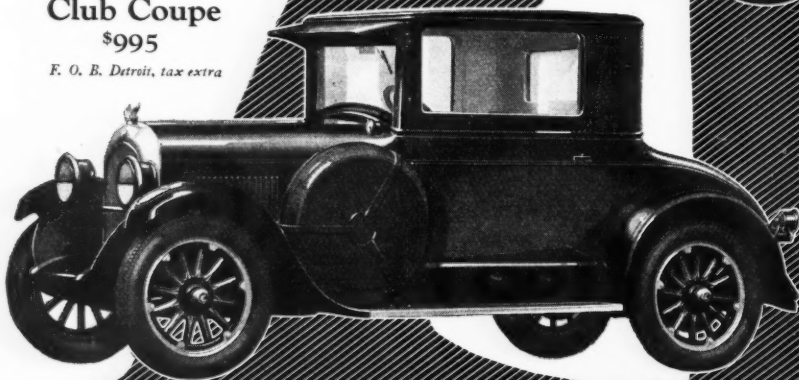
Touring Car
\$895

F. O. B. Detroit, tax extra



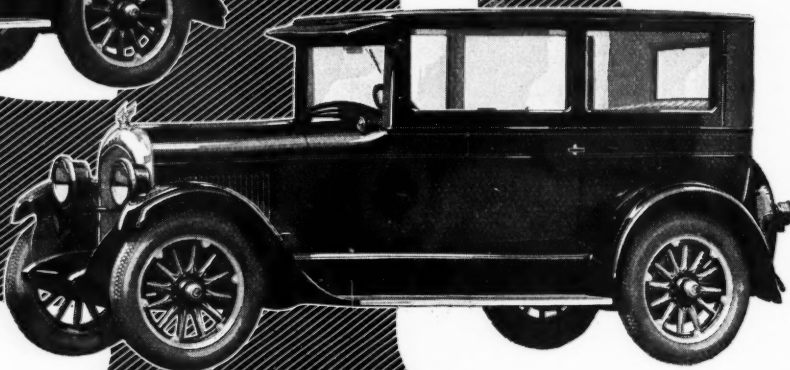
Sedan
\$1095

F. O. B. Detroit, tax extra



Club Coupe
\$995

F. O. B. Detroit, tax extra



Coach
\$1045

F. O. B. Detroit, tax extra

Walter P. Chrysler **FOUR** Tells About It

Walter P. Chrysler's manufacturing ability is proved by the most enthusiastic public endorsement ever given an individual in the motor car industry.

For four years, you have seen Chrysler-created products steadily forging forward to the very fore-front of the four and six-cylinder fields.

You have seen Chrysler engineering, Chrysler manufacturing quality and Chrysler value build up to a production of more than 13,000 cars per month.

Every step of that irresistible advance was part of a process in preparation for the production of the new Chrysler Four.

Now, the full Chrysler conception of of what a four-cylinder car should be, becomes an actuality.

Briefly summed up, it is our conviction that this Chrysler Four *delivers more of power, speed, fuel mileage and charm of appearance than any other four in the world today.*

Mr. Chrysler's description of the new Chrysler Four is here given at length.

"A good engineer never accepts a fact until he has proved it to be a fact to his own satisfaction," Mr. Chrysler said, "and the engineers who designed the Chrysler Four were themselves amazed at the ease and roadability it displayed in their tests.

"It can and does hold its own on the road with the highest priced; and it can and does leave the ordinary and the average far to the rear.

"It will open any man's eyes at the way it takes the long, heavy hills.

"And with Chrysler hydraulic four-wheel brakes, which are optional at a small extra cost, it offers a certainty and a safety that have never before been present in cars of its price.

"In the fewest words, it puts a wholly new interpretation on four-cylinder ability and performance, on riding ease and complete and perfect roadability.

"Like the Chrysler Six, it puts a new interpretation on quality by way of the extensive use of fine and costly alloy steels, and with rigid adherence to the highest of manufacturing standards.

**83% More
Power Than
Official Rating**

"The new Chrysler Four has an official S. A. E. rating of 21.03 horse-power.

Far ahead in power, speed, fuel mileage, beauty; in safety, ease, and complete and perfect roadability. First car of its price with the option of hydraulic four-wheel brakes.

"Yet it actually delivers 38.5 horsepower—83 per cent more power—certainty and performance than its official rating."

"Mr. Chrysler how do you get such performance in a four-cylinder car?"

"How is it done? By uniform distribution of the fuel to the cylinders, by complete combustion, by perfect valve action, by providing for the most efficient operating temperature.

"You can drive this car all day long under heavy load, or at top speed, and the engine will not overheat.

"And for engine lubrication we use the positive, full-force feed.

Better Lubrication With No More Oil

"Nowhere in the Chrysler Four engine is lubrication left to the uncertainty of the older splash method. For example, from the connecting rods, oil is sprayed directly to the piston skirts and cylinder walls. Special oil-proof rings on pistons keep oil out of combustion chambers. Engine gears are constantly bathed in a direct flow of oil.

"All in all, the engine is far more efficiently lubricated and there is no increase in oil consumption.

"Another important point is the very unusual quietness of Chrysler Four engine operation."

"How have you disposed of the vibration which is the bugbear of the four-cylinder engine?"

"We balance all rotating parts, and all reciprocating parts. The crankshaft is heavy and rigid. The pistons and connecting rods are light.

"Crankshaft, clutch hub, and flywheel all are dynamically balanced to a small fraction of an ounce. Connecting rod

and piston assemblies are matched to the hundredth part of an ounce.

"But Chrysler engineers do not stop there. They mount the front end of the engine on a floating platform spring. The usual rigid bolting is entirely lacking.

"The fastenings of rear engine arms to the chassis have rubber bushings and pads interposed so there is no metal to metal contact, literally cushioning the engine on rubber at that point.

"There is no chance for rumble or tremor to reach the body of the car. We are confident that no four has ever before been so smooth in its operation.

A Strong Frame That Cannot Weave

"We have built, in the Chrysler Four chassis frame, a body foundation that is unusually

sturdy. In addition to the customary design of strong, stiff cross members, there is a stout torque tube at the front, and at the rear, a wide, strong, integral brace of heavy gage metal. This frame does not weave and distort.

"You can drive the new Chrysler Four all day with hardly a sense of fatigue. It is hardly ever necessary to shift gears, except for starting.

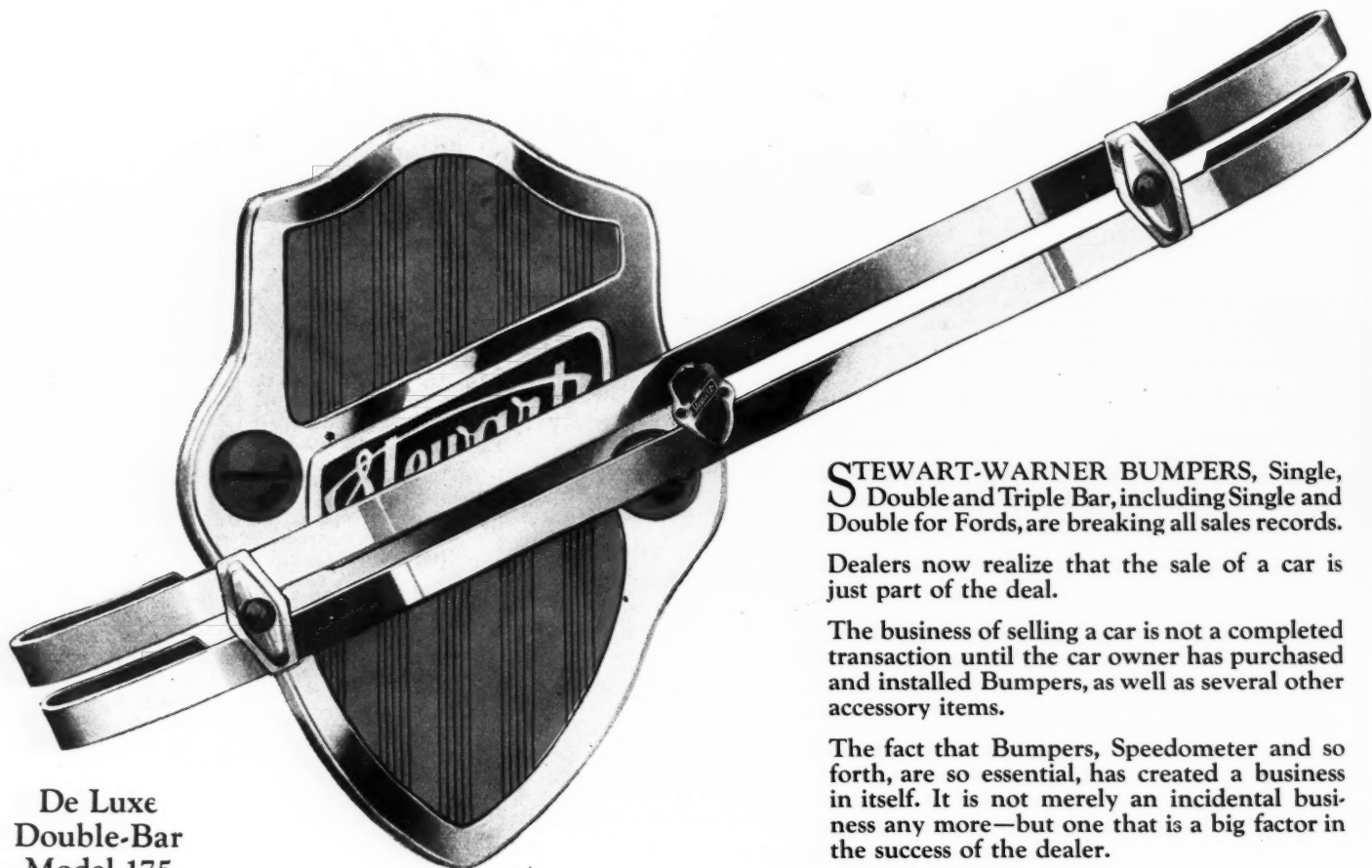
"Steering on any kind of road and at any speed is but the merest effort. In the Chrysler Four, the steering king pins are provided with ball thrust-bearings, and the entire steering mechanism is designed for balloon tires.

"Any attempt of mine to describe the wonderful riding qualities of this car could not possibly do them justice. It is enough to say that a ride in it will amaze and delight you.

"Dynamic symmetry which Chrysler engineers were first to translate into beautiful motor car design in the Chrysler Six, is the basis, of course, for the beauty of the Chrysler Four. Closed car bodies are built by Fisher."

"The Chrysler organization is just as proud of the Chrysler Four as of the Chrysler Six. It presents this most modern and soundest expression of the four-cylinder principle with the conviction that the Chrysler combination of four-cylinder results will have no equal for years to come."

Sales Records



De Luxe
Double-Bar
Model 175

Stewart-Warner Single, Double and Triple Bar Bumpers include equipment for all cars

Black Enameled or Nickel Plated.
Prices range from \$12.50 to \$37.50.
(Slight increase in Western prices.)

Recently added to the Stewart-Warner Bumper line—A new medium weight double bar Bumper for Ford, Chevrolet and Overland Four. Highest quality tempered spring steel, three-eighths inch thick. Ask for Model 277.

Rear Fender Guards—Black Enameled and Nickel Plated.
\$23 and \$25 pair. (West of 100° Meridian \$26 and \$28.)

STEWART-WARNER BUMPERS, Single, Double and Triple Bar, including Single and Double for Fords, are breaking all sales records.

Dealers now realize that the sale of a car is just part of the deal.

The business of selling a car is not a completed transaction until the car owner has purchased and installed Bumpers, as well as several other accessory items.

The fact that Bumpers, Speedometer and so forth, are so essential, has created a business in itself. It is not merely an incidental business any more—but one that is a big factor in the success of the dealer.

The fittings, the quality of the material, the finish, the full car width of all the protecting bars—give 100% Protection and all that can be desired in beauty.

You can't buy a better Bumper.

The public—in ever growing numbers—have found this out—and provided a highly profitable opportunity for dealers who have an eye to business.

A new car—properly equipped—is a rolling advertisement that builds business for the dealer who turns it out fully equipped with Stewart-Warner Accessories. You know what this means.

Bumpers add the finishing touch.

Stewart-Warner Bumpers

ONE OF THE STEWART-WARNER ACCESSORY FAMILY

s Being Smashed!



SALES of Stewart-Warner Speedometer for Fords are breaking all records. Ford Dealers are making **NEW BIG Profits.**

Here's the only article of its kind in the entire field of equipment for Fords, and one for which the Ford car creates an absolute necessity.

When the Ford Factory places the "Notice to User" on the windshield of every new Ford, which reads: "To obtain *best results*, this car should not be driven faster than 20 miles per hour for the first 500 miles. Oil *should* be changed after first 400 miles and *every* 750 miles thereafter"—they create, a "hand-picked," "ready-made" sales opportunity for the dealer.

That Ford Dealers are realizing this in ever increasing numbers, is shown by the widespread increase in Stewart-Warner Speedometer sales.

The New Ford Owner cannot invest an additional \$15 to better advantage, right at the time of starting out with his new car, than in a Speedometer that warns him "When" and tells him "Where" to oil and grease.

These added features cost the car owner nothing in addition to the regular speedometer cost, but add additional selling reasons for the dealer that make sales easy—and profits multiply.



\$15

(\$15.50 West of 100° Meridian)

"Our Own" Distributing System with Direct Factory Branches in 96 cities throughout the world, which includes 62 Service Stations in U. S. and Canada, provides "Stockroom" service for dealers everywhere.

It enables dealers to carry a small stock and keep supplied as required, from fresh new stock, direct from the Stewart-Warner Service Station within a few hours time. No other Accessories have such a distributing advantage.

STEWART-WARNER SPEEDOMETER CORPORATION
CHICAGO - U. S. A.

Stewart-Warner Speedometer for Fords

ONE OF THE STEWART-WARNER ACCESSORY FAMILY



What AC Means to the Dealer

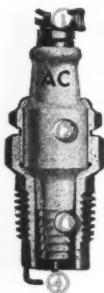
AC Spark Plugs



More than 80% of all the cars produced in this country, Fords excluded, are factory equipped with AC Spark Plugs. Among these cars are:

Apperson	Dodge	Maxwell
Buick	Brothers	Nash
Cadillac	Durant	Oakland
Case	Essex	Oldsmobile
Chandler	Fliat	Paige
Chevrolet	Hudson	Star
Chrysler	Hupmobile	Vellie
Cleveland	Kissel	Westcott
Davis	Marmon	Wills Sainte Claire

AC 1075 for Fords



One glance tells the whole story — Why the AC 1075 is an especially good plug for Fords—Here are its features:

- 1 Spring Terminal Clip
- 2 Heavy Body Porcelain
- 3 High Temperature Fins—Patented Carbon-proof Porcelain
- 4 Heavy Electrode Forms Natural Oil Drain.

Dealers who carry a good stock of AC products can build a profitable business. The demand is assured because of their use as car equipment.

* * *

Backed by strong advertising.

* * *

They afford you the margin of profit you should get.

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers—AC Air Cleaners

AC-SPHINX
Birmingham
ENGLAND

AC-OLEO
Levallois-Perret
FRANCE

AC Speedometers



The Model for Fords

Miles per hour, miles per trip, total mileage—it tells them all. Simple direct drive is a big improvement over previous types of drives as it does away with the swivel joint. Complete with all attachments and once installed is a source of constant satisfaction. The cost is surprisingly low—\$15. (\$21.00 in Canada.)

That AC Speedometers can be depended upon for trouble-free operation, is evidenced by the fact that they are original equipment on such cars as Buick, Cadillac, Chevrolet, Chrysler, Gray, Maxwell, Oakland, Oldsmobile and GMC Trucks.

AC Air Cleaners



Easily installed as it connects directly to the carburetor.

Once installed it requires no attention, having no moving parts to get out of order, and its high permanent cleaning efficiency keeps down repair bills.

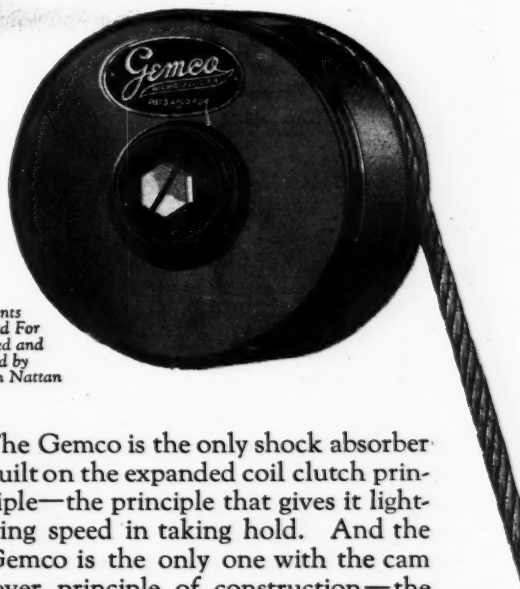
Comes complete with all attachments and is reasonably priced—\$5.00 to \$7.00 (\$7.00 to \$10.00 in Canada) depending on the size required.

No Servicing



**Sell the Gemco—
and then Forget it!**

A Clear Profit on Every Sale!



Patents
Applied For
Designed and
Licensed by
V. Van Nattan

The Gemco is the only shock absorber built on the expanded coil clutch principle—the principle that gives it lightning speed in taking hold. And the Gemco is the only one with the cam lever principle of construction—the principle that produces real proportionate control. Attractive in appearance—Red and Blue Duco finish and controlled by rust-proof cable. The Gemco fits all cars and sells at a reasonable price. Look into this wonderful achievement at once. Write for illustrated folder and prices.


Gemco

SHOCK ABSORBER

GEMCO MFG. COMPANY, 760 So. Pierce St., Milwaukee, Wis.

Makers of America's First Automobile Bumpers





I N Q U

DURING four months in 1924, more than 5000 inquiries direct from car owners were received at the Multibestos Home Office. One more indication of the public's ever increasing interest in Multibestos.

M U L T I
B R A K E

RIES

Multibestos Taxitrux Brake Lining—Multibestos 229 Transmission Lining for Ford Cars—Multibestos Special Transmission Lining for Ford Cars—Multibestos No-Wire Transmission Lining for Ford Cars—Multibestos Fibre Transmission Lining for Ford Trucks—Multibestos Lined Brake Shoes for Ford Cars—Multibestos Clutch Linings.

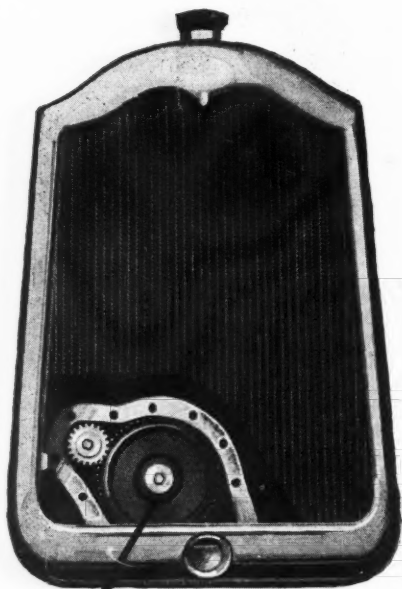
MULTIBESTOS COMPANY

WALPOLE, MASS., U. S. A.

Branches: New York Chicago Detroit Nashville

BESTOS

LINING



What all owners like

A QUIET running engine sweetens any motorist's disposition. Most of the irritating motor noise comes from the front of the engine—and most of that comes from the clash of metal-on-metal in the timing assembly.

Textolite

Silent Cam Shaft Timing Gear

eliminates the metal-to-metal contact and consequently the noise.

Textolite Cam Shaft Timing Gears have a flexible web. They are die-formed. They will absorb the shocks of 100,000 miles of severest service. They are oil-proof, heat-proof and tougher than cast iron.

Be prepared to give this sure-to-satisfy service. You can get the complete story and name of your nearest distributor from



Textolite Gears are not the only means provided by General Electric toward greater motoring satisfaction. MAZDA Lamps, that help to make night driving safe and easy, are also a General Electric development.

JOHN C. HOOFF & COMPANY
157 West Illinois Street, Chicago, Ill.

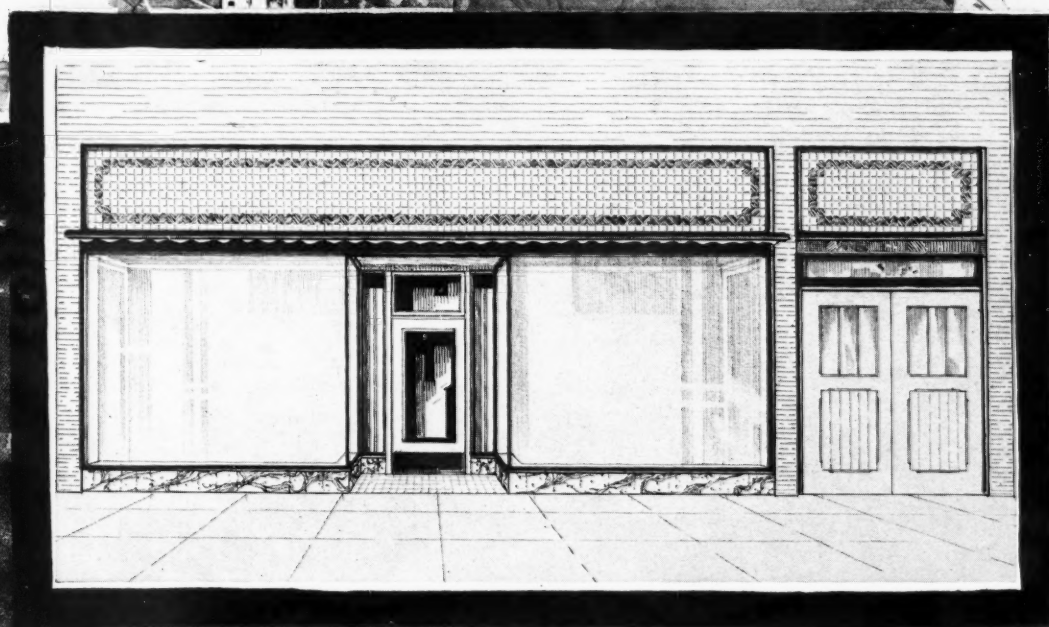
50-17

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL LARGE CITIES

The Trade Ships of Yesterday

and TODAY



Kawneer

SOLID COPPER

STORE FRONTS

As silently as ships that pass in the night have gone the old-fashioned store fronts. As efficient as a modern ocean liner is the Kawneer Solid Copper Store Front.

More than 260,000 merchants, in many lines of business, have Kawneerized their stores. From hundreds of these merchants, we have received letters telling of the satisfaction, improved appearance, and increased profits from their Kawneer Store Front.

Return the coupon today for "Design Book"

The
Kawneer Company,
2524 Front St.,
Niles, Michigan.

Please send me without obligation
"Design Book" of Kawneer Solid Copper
Store Fronts.

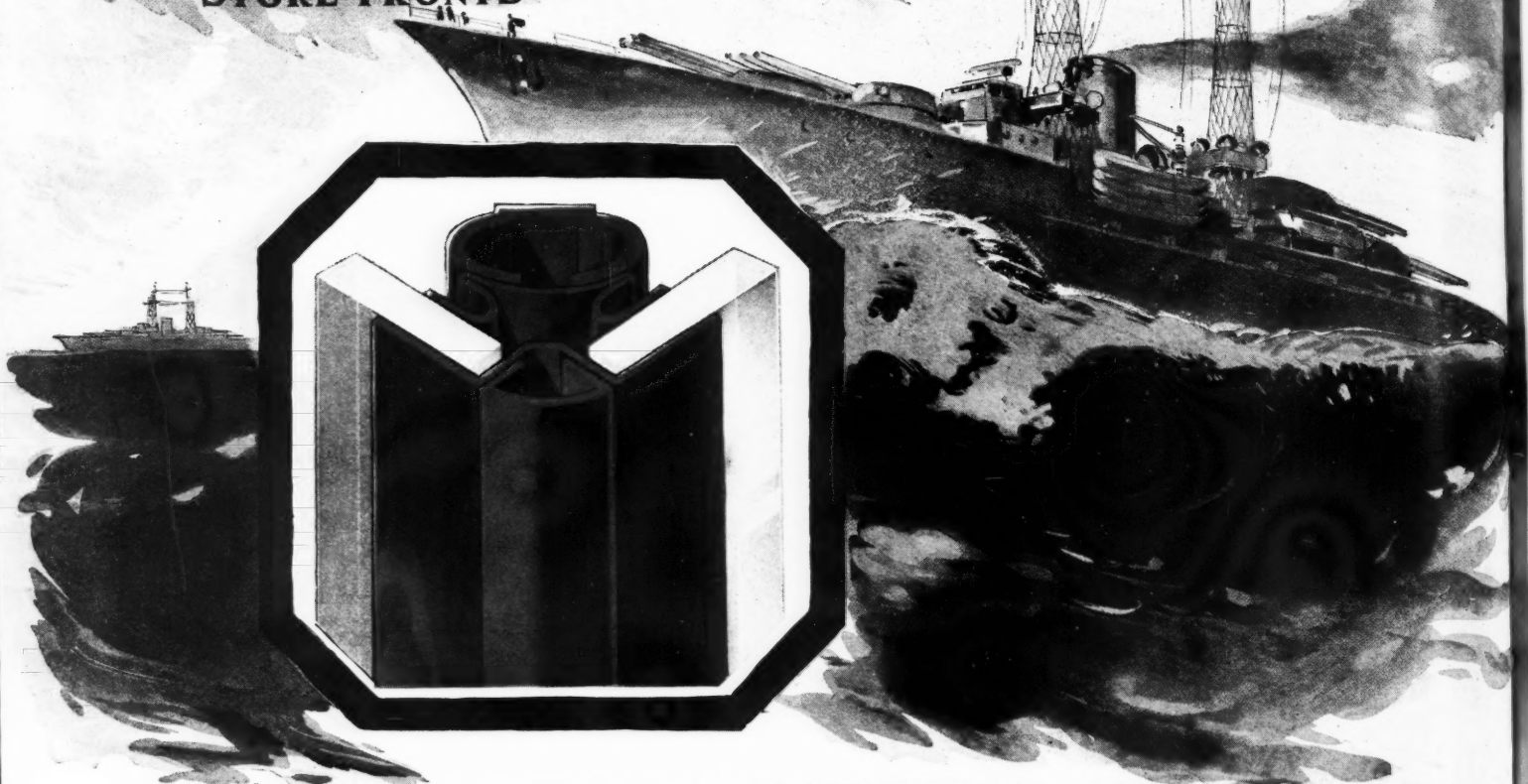
Name.....

Address.....

City..... State.....

The Strength of a Battleship

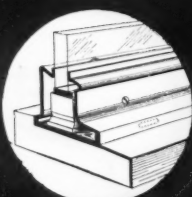
IS BUILT IN
Kawneer
SOLID COPPER
STORE FRONTS



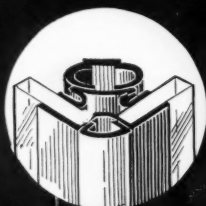
KAWNEER STORE FRONTS WITHSTAND THE ELEMENTS

Year after year, Kawneer Solid Copper Store Fronts retain their beauty of design and strength of construction against the fierce onslaught of rain, wind, snow and sleet. Kawneer construction holds the finest plate glass in its spring-like resilient grip, resisting the most severe stress and strain.

Note the six superior points of Kawneer construction illustrated herewith.



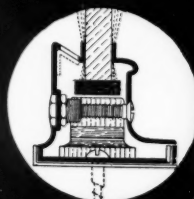
PERMANENCY



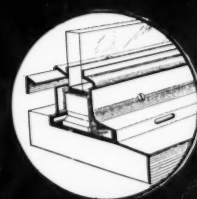
RUGGED STRENGTH



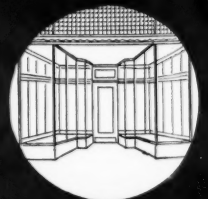
BEAUTY OF DESIGN



RESILIENCY



VENTILATION



EASE OF INSTALLATION

features that sell
the new Chevrolet

HELPING DEALERS TO SELL

Factory sales cooperation with Chevrolet dealers reaches out to the final delivery of cars at retail.

Chevrolet dealers find that the aid they get from the Chevrolet Motor Company is a material help in securing a satisfactory volume of profitable business.

CHEVROLET MOTOR COMPANY, DETROIT, MICH.
DIVISION OF GENERAL MOTORS CORPORATION



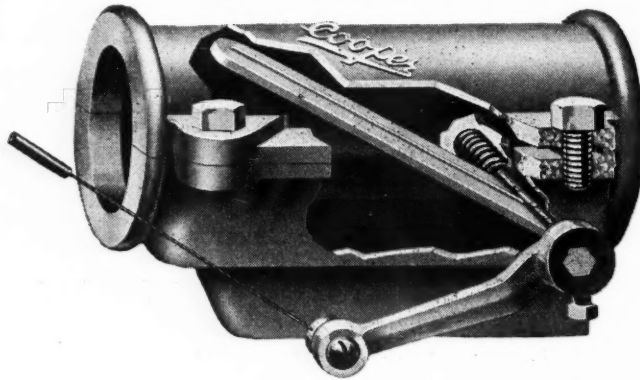
for Economical Transportation

QUALITY AT LOW COST

The Cooper

CUT-OUT

Engine Tester and Carbon
Outlet Valve



Prices Valves Only

1½ in.	\$2.50
1⅝, 1¾, 1⅞	3.00
2, 2⅛	3.50
2¼, 2⅜, 2½, 2⅞	4.00
2¾, 2⅞, 3	5.00
Chevrolet Special	4.00
Cooper Special Valve, complete with pedal for Fords	3.00

Sells As It Serves— All The Year 'Round

The Cooper is always ready, with its sharp staccato "crack," to tell the driver how his engine is running; to enable him to test the mixture, the compression, the firing; to warn him of clogging cylinders.

That is why every motorist wants one, because it's the most efficient and reliable engine-tester made. It sells

as it serves — all the year 'round.

Ruggedly made, with extra heavy axle, flapper and spring. Absolutely silent when closed. Easily installed without severing or weakening the exhaust pipe.

Sell it with the Cooper Dash Control and make two profits on one sale. Order from your jobber today.

Cooper
Chevrolet
Valve
Only



Special
Cut-out
\$4.00

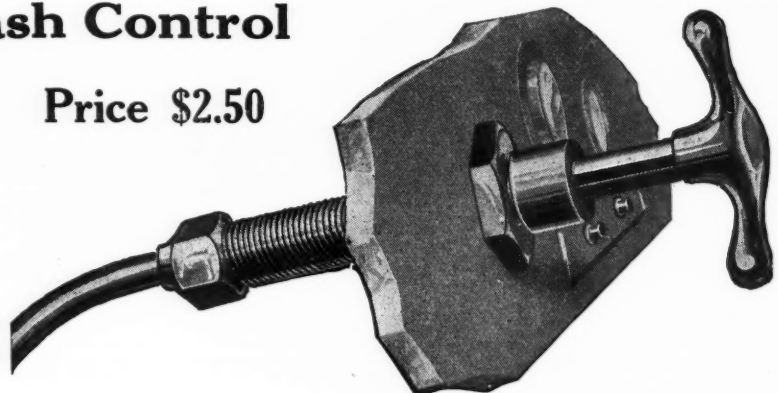
The Cooper Dash Control

An ideal control for cut-outs, heater valves, chokes, exhaust, etc. Twist of wrist locks it in any position. Always in sight—always in reach. Brass and steel. All exposed parts nickel plated and polished. A quick and steady seller.

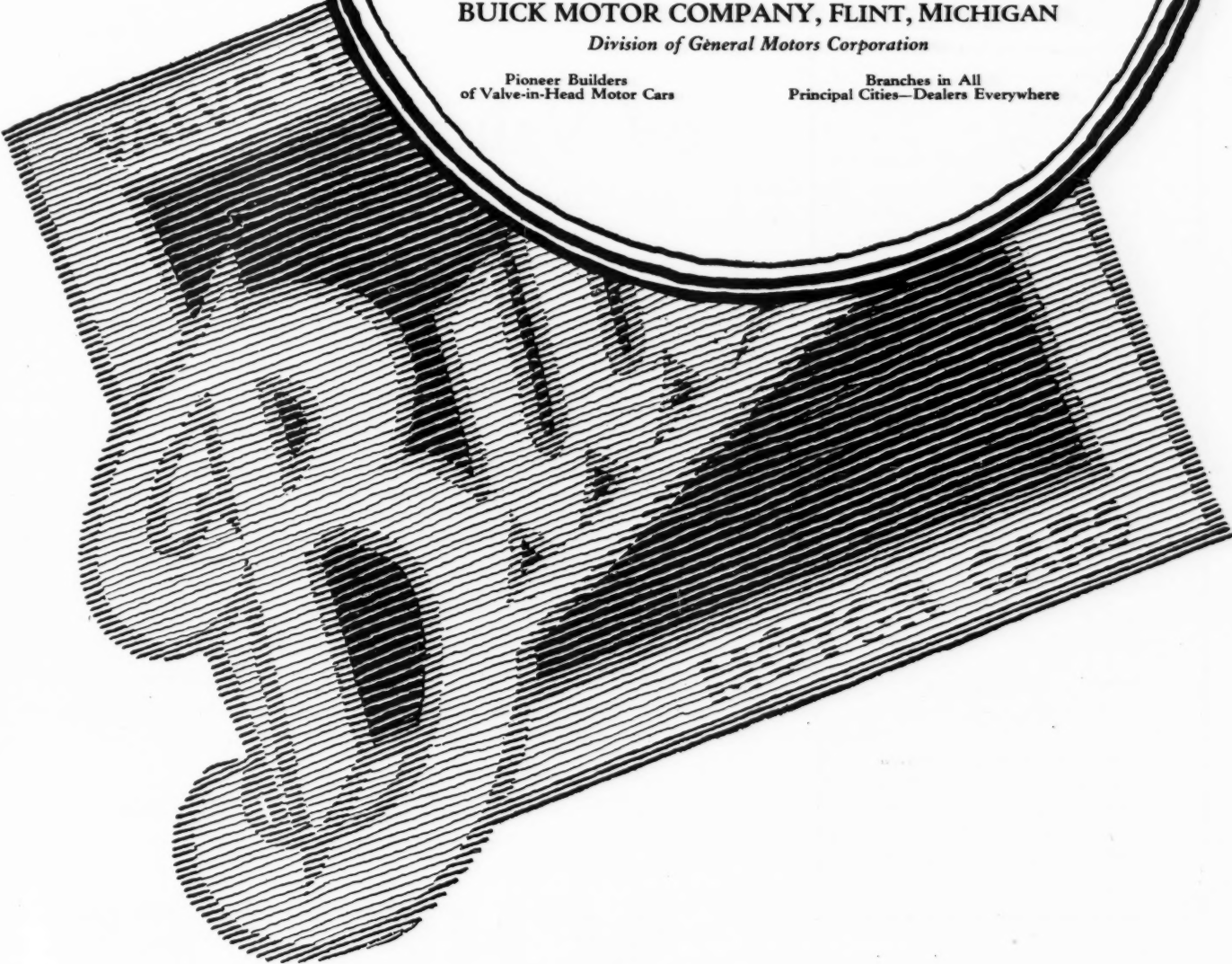
Price \$2.50



COOPER JR. DASH CONTROL: Similar in operation. Polished nickel hand-grip; black enameled dash plate. Price \$1.25.
Complete with Cooper Special Cut-out for Fords, \$3.75.



THE COOPER MANUFACTURING COMPANY
419 South First Avenue
Marshalltown, Iowa
Exclusive Sales Representatives
THE FULTON COMPANY, MILWAUKEE, WIS.



Because Buick enjoys the unusual
good will of motorists—whether they
own a Buick or not—Buick dealers
enjoy the good will of all automo-
bile owners in their communities.

*Those desiring the Buick franchise
should have their names on file.*

BUICK MOTOR COMPANY, FLINT, MICHIGAN

Division of General Motors Corporation

Pioneer Builders
of Valve-in-Head Motor Cars

Branches in All
Principal Cities—Dealers Everywhere

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM

New List Prices on Schebler Package Outfits

The highly refined Schebler Model "S" Carburetor is now on a price basis directly competitive with many ordinary plain tube carburetors for replacements. There is an active demand for the exact carburetion the Schebler Model "S" provides, because of the notably superior performance it gives.

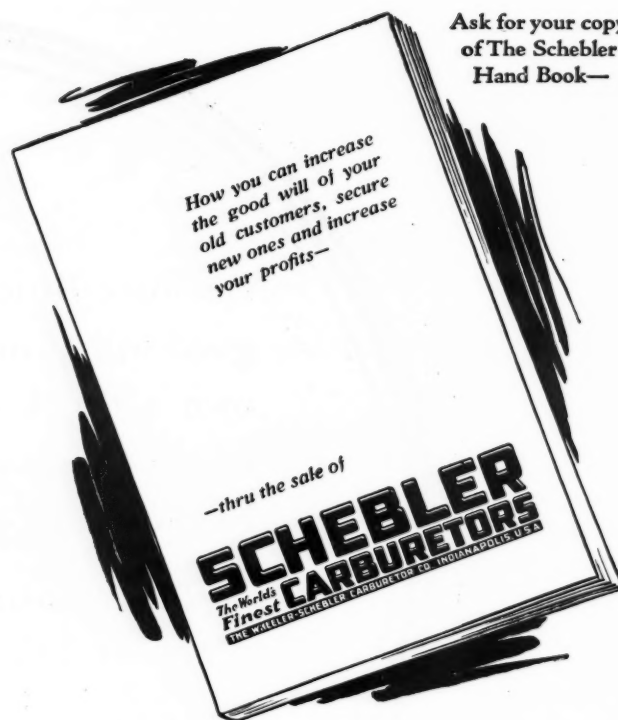
Important Schebler Package Outfits

The complete package outfits include all fittings required for installation, and Hot Spot equipment when necessary to insure best performance.

Buick 45-47-49	\$25.00
Buick 6, 1924	30.00
Buick 4	25.00
Chandler	24.00
Chrysler	24.00
Dodge	28.00
Essex	22.50
Flint 6, 1924-25	22.50
Hupmobile	20.00
Hudson, 1924-25	30.00
Jewett	29.00
Maxwell	19.00
Nash	25.00
Nash 4	22.50
Oakland 1924-25	21.50
Overland 6	25.00
Reo	22.50
Reo Speed Wagon	25.00
Studebaker Big 6	28.50
Studebaker Special 6	27.00
Studebaker Light 6	22.50
Studebaker Std. 6	22.50
Willys Knight	24.50

Schebler Special Package Outfits

Chevrolet, to 1924	\$19.00
Chevrolet, 1925	18.00
Ford	10.00
Ford with Hot Spot	15.00
Overland	15.00



Ask for your copy
of The Schebler
Hand Book—

A Valuable Franchise for Automotive Distributors and Dealers

DEALERS who give automotive service will find that carburetor sales will fit into their business and increase their profits considerably. The Schebler franchise is today the most valuable you can get, because—

Since 1901 Schebler Prestige has grown. Because of high quality and *Exact* carburetion, Schebler Carburetors are famous the world over.

Schebler offers the most complete line of carburetors.

Schebler offers a concrete merchandising plan for the Service Station to follow, the most valuable cooperation in getting the line established and in building up Sales Volume.

Schebler Discounts are liberal and permit good profits.

Consider these competitive prices—consider the other values of the Schebler franchise. Now, while this value is growing, do you want it—can you profit from it in your business? Write today for the name of your nearest Schebler distributor.

WHEELER-SCHEBLER CARBURETOR CO.
INDIANAPOLIS

SCHEBLER
The World's Finest **CARBURETORS**

ARVIN HEATER

**Boy, Howdy!
Here's a Heater!**

Yes Sir'ee! The Arvin Special is some heater—the most efficient ever built. It begins to heat as soon as the car is in motion. And when the engine gets warmed up—boy, how it's heatin'.

This is the new Arvin Heater we brought out for Ford and Chevrolet cars last year—the heater that created such a sensation. This year, the Arvin Special will be available for Dodge cars, too.

Last year, we couldn't keep up with the demand for Arvin Specials—but we've geared up to make and sell lots of 'em this year. The biggest national advertising campaign in Arvin history will get under way early in October. It's none too soon to order your Arvin stock. Order from your jobber now.

INDIANAPOLIS PUMP & TUBE COMPANY

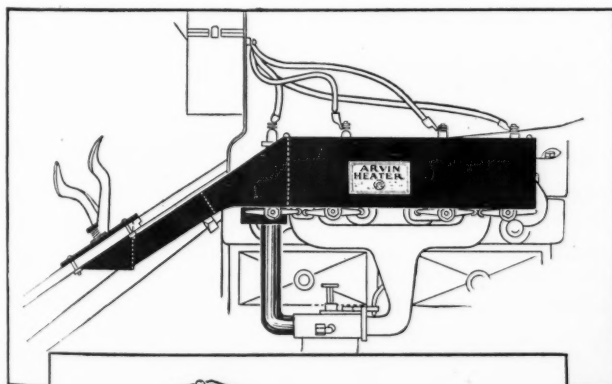
General and Sales Offices—INDIANAPOLIS

Pump and Tube Div.
Greenwood, Ind.

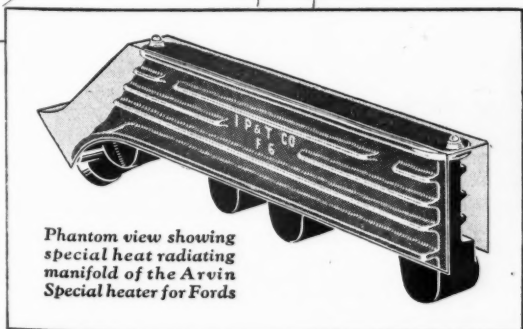
Dan Patch Coaster Wagon Div.
Connersville, Ind.

Arvin Heater Div.
Greenwood, Ind.

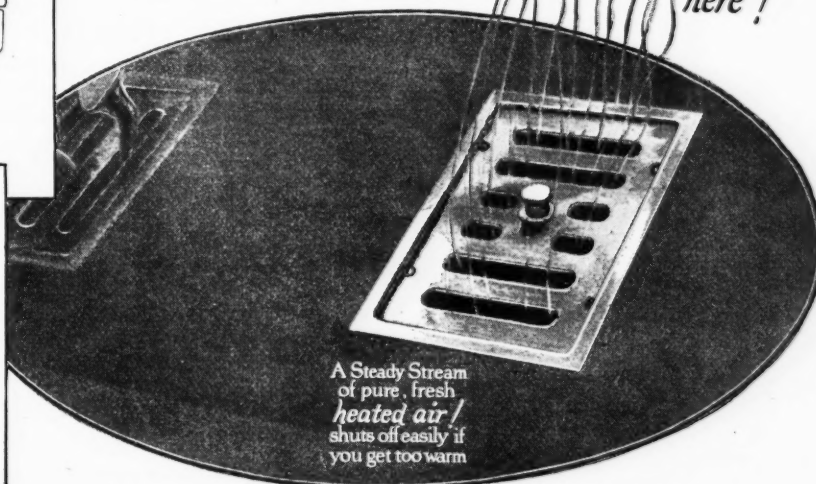
The Low Cost of	
ARVIN HEAT	
Special Type for	
FORD . . .	\$6.00
CHEVROLET . . .	\$6.50
DODGE . . .	\$9.00
Also—	
Regular Type for	
FORD . . .	\$1.75
OVERLAND . . .	\$3.00
Prices Slightly Higher in Canada and Far West.	



At left is the Arvin Special heater for Fords installed—a typical Arvin Special installation



Phantom view showing special heat radiating manifold of the Arvin Special heater for Fords



✓ **Heat?**
Just hold
your hand
here!

Biflex

Cushion Bumper

First in Minds of Dealers and Users
First to Build the Bumper Industry
First in Volume of Business

- 1 The only real nationally advertised bumpers.
- 2 The only bumpers having national distribution.
- 3 The only bumpers with interchangeable brackets for a majority of cars.
- 4 A wide variety of bumper styles and sizes—both parallel bar and Biflex type.
- 5 A wide range of prices, \$13.00 to \$32.00.

THE BIFLEX CORPORATION
WAUKEGAN, ILLINOIS

HALLADAY
BUMPERS
A Biflex Product

Pulls in the Timer Sales

PUT the Milwaukee Timer Display Stand right up in front where it belongs—the first thing your Ford owner customers see on the way in—the last thing on the way out.

This clever, colorful little display is a constant reminder that your store sells the famous Milwaukee Timer—the timer they see advertised every other week in the Saturday Evening Post, every month in Collier's, Country Gentleman and a whole group of farm papers—the timer they know from experience puts new pep—new speed—new pick-up in their Fords.

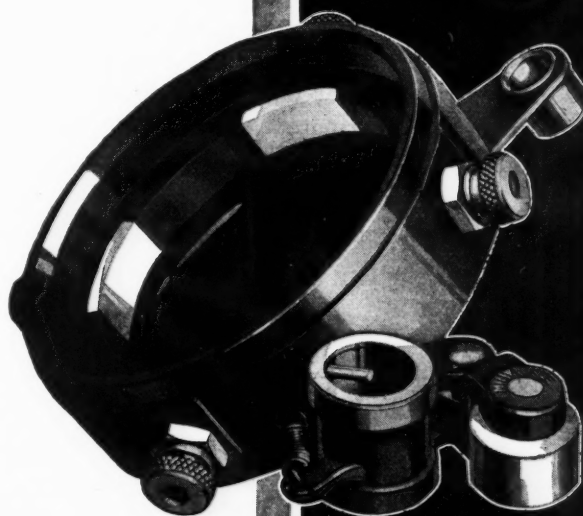
Hook-up to all this advertising and prestige—put the Milwaukee Timer Display Stand in a prominent place on your counter. Then watch how it sells timers faster.

By the way, if your stock of Milwaukee Timers is low, put in a re-order now with your jobber. Write direct for the stand.

MILWAUKEE MOTOR PRODUCTS, INC.
MILWAUKEE WISCONSIN



Easy to assemble this display. One terminal nut fastens timer case to top of stand. Then snap brush assembly into die-cut hole in face of stand. That's all.

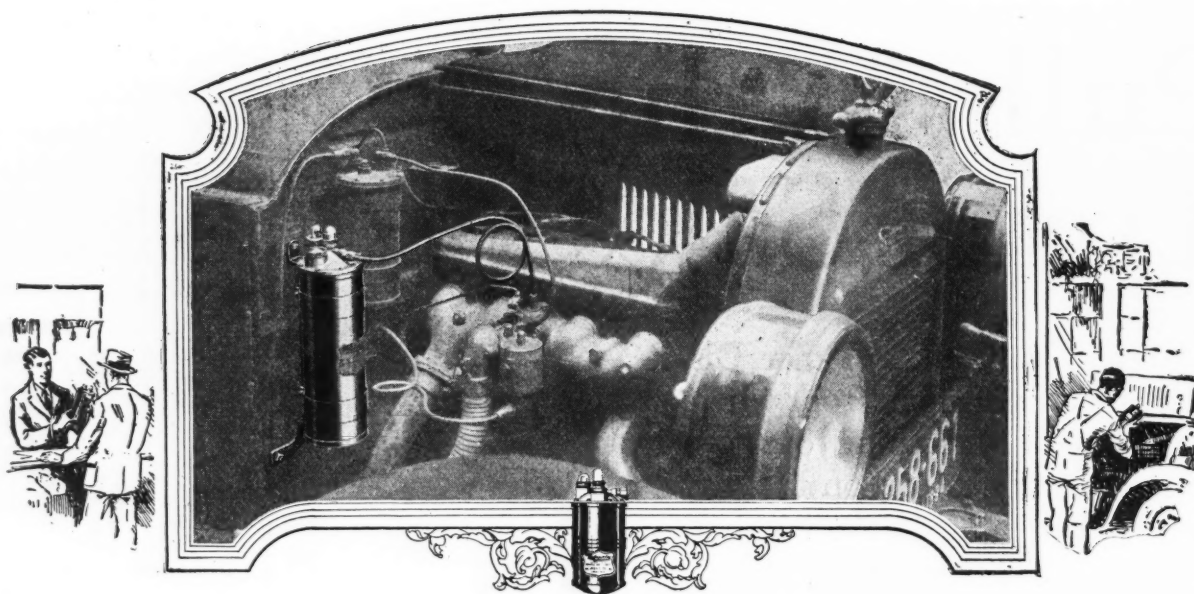


MILWAUKEE

TIMER for FORD

SHORT-PROOF

Selling fast at \$2.00
(\$2.75 in Canada)



Cash In on this Market With the Luburetor !!

SUMMER is here—every car is in use—every car owner is ready to receive, with open arms, an improvement in the performance of his motor.

Long miles in the summer heat, in city streets or on the open road, bring out beyond any doubt, the need for more adequate motor lubrication. Drivers of passenger cars and trucks can feel the strain under which the motor operates and can sense the necessity for protection against excessive wear of cylinder walls, pistons and valves.

This is the Luburetor Market, and it says "Welcome" to the Luburetor Dealer. He can cash in on it — NOW!

The Luburetor is a basic improvement in motor lubrication. It is ready for installation on every passenger car, truck or tractor. It has a year round appeal. But, now, early in the heavy driving season, the demand for the Luburetor is greatest. Sales will come easier—profits will be bigger.

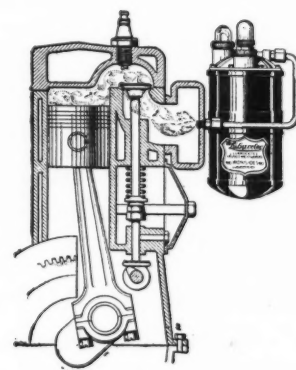
Send us your name and address. We want to send you a complete description of the Luburetor—what it does—how it works—what it costs you—what it sells for. You are sure to be interested because it offers you a sound, business like way to make more money.

THE LUBURETOR COMPANY
471 EAST BROAD STREET, COLUMBUS, OHIO

The Luburetor

TRADE MARK REG.

FOR ALL PASSENGER CARS, TRUCKS AND TRACTORS



THE LUBURETOR
PRINCIPLE

The Luburetor principle includes provision for an independent supply of oil and its introduction through the intake manifold into the combustion chamber, as shown above.

Accurate regulation of the feed to correspond with engine load and speed is provided by a rugged piston valve in the Luburetor, which is operated by vacuum. The Luburetor requires no service and will outlast the engine itself.

TEAR off the coupon and mail it in today. Pin it to your letter head, if you like. But send it TODAY. The big selling season is here!

THE LUBURETOR CO., Columbus, Ohio.
Please send me by return mail full description,
prices and discounts on the Luburetor.
Signed _____
Street _____ City _____ State _____

MA-7

Economy and convenience
in welding and cutting
are obtained by using
the oxygen for both oper-
ations with

Prest-O-Lite

DISSOLVED ACETYLENE

THE PREST-O-LITE COMPANY, INC.

Oxy-Acetylene Division

General Offices: Carbide & Carbon Bldg., 30 East 42d St., New York

In Canada: Prest-O-Lite Co. of Canada, Limited, Toronto

31 Plants—60 Warehouses—22 District Sales Offices



Steady, Smooth Riding Over Rough Roads

A similar attractive
full-page advertise-
ment appeared in the
Saturday Evening
Post, June 27th.

STROMBERG SUPER SHOCK ABSORBERS

Sold and Guaranteed by the Builders of the Famous Stromberg Special Carburetors

MR. CAR DEALER: You will never know how much you are sacrificing in sales and profits until you have Stromberg Super Shock Absorbers on your car.

Only then will you realize all of the comforts and pleasures the cars you sell are capable of giving. Only then will you be fully convinced that at last there is a shock absorber that you can whole-heartedly recommend and push to the limit.

There are twelve special reasons why you should start now selling Stromberg Super Shock Absorbers. Read them in the column opposite. Then write for information regarding our Extensive National Advertising now appearing, our constructive merchandising plans, and liberal dealer proposition — all to help you make great sales and profits. Don't wait. Write today.

Prices of Individual Package Equipments, complete with all fittings necessary for installation, for the following cars:

Buick \$35.00	Hupp \$35.00	Studebaker \$35.00
(Standard Six)	(Four Cyl.)	(Stand. Six Spl. Six)
(Master Six)	Jewett 35.00	Willys-Knight .. 35.00
Chandler 35.00	Maxwell 35.00	
Cleveland 35.00	Nash 35.00	Ford 12.50
Dodge 35.00	Oakland 35.00	Chevrolet 24.75
Essex 35.00	Oldsmobile 35.00	Overland 14.00
Hudson 35.00	Reo 35.00	Star 24.75

Standard sets of four for all other makes of cars weighing less than 4000 pounds \$35.00 (separate pairs for front or rear for all other makes of cars, complete with fittings \$17.50)

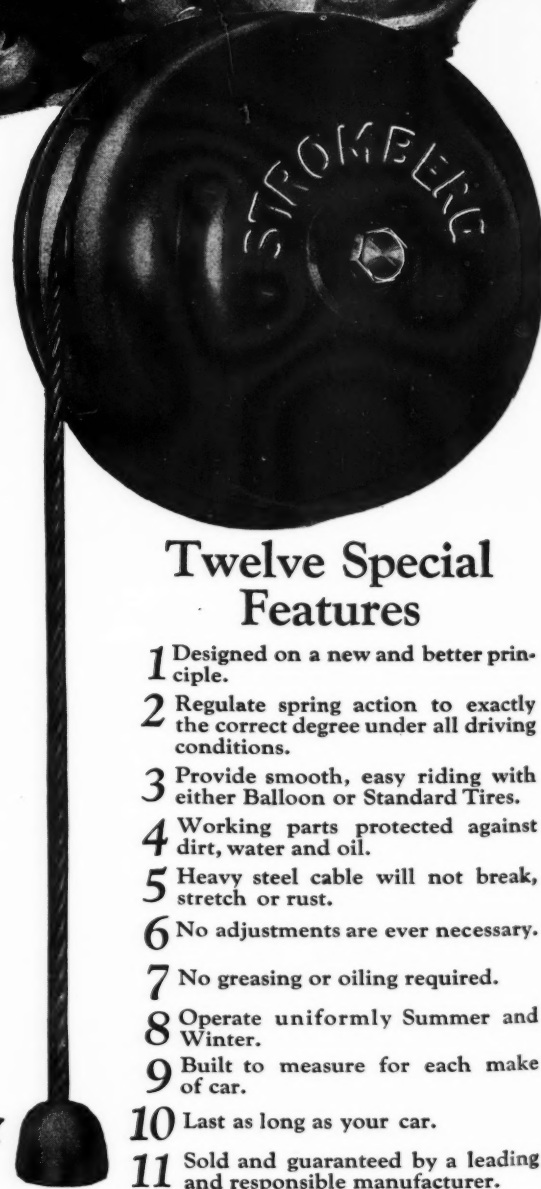
All prices slightly higher on Pacific Coast and Canada

Prices and information on all other makes of cars, on application

STROMBERG MOTOR DEVICES COMPANY
68 EAST 25th STREET, CHICAGO

Direct Factory Branches:

NEW YORK BOSTON DETROIT MINNEAPOLIS KANSAS CITY LONDON, W. I
517 West 57th St. 760 Commonwealth Ave. 2739 Woodward Ave. 1609 Hennepin Ave. 1809 McGee St. ENGLAND
173-75 Cleveland St.



Twelve Special Features

- 1 Designed on a new and better principle.
- 2 Regulate spring action to exactly the correct degree under all driving conditions.
- 3 Provide smooth, easy riding with either Balloon or Standard Tires.
- 4 Working parts protected against dirt, water and oil.
- 5 Heavy steel cable will not break, stretch or rust.
- 6 No adjustments are ever necessary.
- 7 No greasing or oiling required.
- 8 Operate uniformly Summer and Winter.
- 9 Built to measure for each make of car.
- 10 Last as long as your car.
- 11 Sold and guaranteed by a leading and responsible manufacturer.
- 12 Each set in separate package which contains all necessary fittings for installation.

A Simple Wash—and Refinishing Success is Insured!

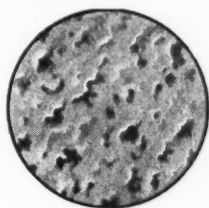


TWO kinds of bodies are behind every finish that goes down the street—the chemically clean and the body alive with rust germs and, in many cases, paint remover. They are easy to distinguish—the chemically clean are those whose finish is smooth and unbroken—the others are the failures.

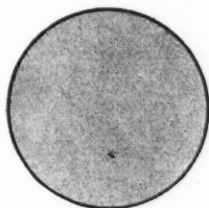
No matter how long and hard a body is scrubbed and rubbed preparatory to the finish, rust germs remain in the pores of the metal. For a finish to be successful, they must be killed. They are the cause of checking, peeling and finger marks showing through.

Nine out of ten car manufacturers have recognized this fact and now prepare their bodies for the original finish with Deoxidine. The bare metal is chemically cleaned with Deoxidine, then washed with water, dried and given the finish—proofed against failure.

In the same way refinishers can insure success. The cost of Deoxidine is slight. In fact, it is an economy. Use it on your next job. Get the generous test bottle now. There is enough to prepare one car for the finish. Fill in the coupon.



Photograph of a finish 3 months old. The body was not properly prepared. Note how the rust is breaking through.



A finish on a Deoxidine prepared surface after 3 months. Rust germs and paint remover are dead. A smooth, durable finish.

American Chemical Paint Company

Detroit Offices and Warehouse
137 Woodbridge St., E.

General Offices and Factory
Ambler, Penna.

Canadian Factory
Windsor, Ont.

Protect the Paint That Protects Your Product

TRADE MARK
DEOXIDINE
REG U S PAT OFFICE



free

American Chemical Paint Co.
Ambler, Pa.

Without obligating me, please send the free test bottle of Deoxidine.

Name.....

Address.....

An all-around Champion



the new Crescent 9-inch large capacity wrench

is hanging up new records in accessory departments. Its strength, its wide range of adjustment, and its smooth, easy action make it a popular tool among car owners, farmers, mechanics, housekeepers, and anyone who has occasion to use tools.

It is drop-forged throughout, including the jaw. Made of special analysis steel for a life time of hard service. Opens up to 3 inches. Attractively polished. Retails for 75c.

Your jobber has it.

CRESCENT TOOL COMPANY

208 Harrison Street

Jamestown, N. Y.

Originators of the Crescent Wrench

This 18-inch Crescent Wrench is standing more of a strain than most wrenches are ever called on to bear in actual work. The 019 wrench is made of the same material and gets the same heat treatment as the regular Crescent. All Crescent Wrenches are designed to carry more of a load than users are likely to put on them.

CRESCENT TOOLS

Self Preservation is the First Law of Business

Protect and increase your reputation as an automobile dealer who gives his customers the best of everything—and make more money!

If the manufacturer of the car you sell does not furnish Protectomotor as standard equipment, see to it that every car you sell is equipped with the Protectomotor.

99⁹/₁₀
EFFICIENT

PROTECTOMOTOR
REG. U.S. PAT. OFF.
Perfect Positive Protection

99⁹/₁₀
EFFICIENT

Triplies the Life of Your Motor

FILTRATION is the only method that removes all dust, sand and grit in the 9,000 gallons of air that enter the motor with every gallon of gas. Protectomotor alone

Prevents Wear 75% to 85%

Prevents Carbon 60% to 75%

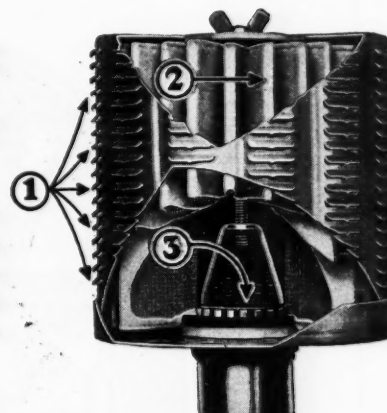
Prevents Carburetor Noises

Five years actual use on many makes of automobiles, trucks and tractors, tests made by the University of California, the United States Government, automotive manufacturers and engineers, prove every claim made in this advertisement.

If your dealer cannot supply Protectomotor, write us direct giving make and model of car and make and model of carburetor.

STAYNEW FILTER CORPORATION
ROCHESTER, N. Y.

A MOTOR WITHOUT A PROTECTOMOTOR
IS LIKE A WATCH WITHOUT A CASE

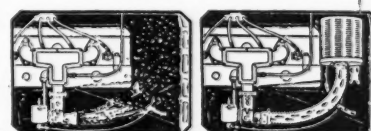


1 Air enters large number of small openings in outer shell at low velocity so the coarse particles of dust are separated by gravity.

2 Specially constructed filtering material, chemically treated, removes even the finest (those that cause wear) particles of dust but readily permits air to pass through.

3 Pure, clean, FILTERED warm air passes through this outlet to carburetor and motor, the fine dust (the cause of wear) entirely removed.

Important:—Protectomotor is made of aluminum and rust-proof material throughout. Due to highest grade of workmanship and material it presents an unusually attractive appearance.



Dusty Air
that causes wear

Filtered Air
that prevents wear

Every Protectomotor equipped car you sell adds a satisfied owner to your list, an owner who will recommend you and the car you sell.

Five years actual use on all makes of automobiles, trucks, tractors and buses, tests by the University of California, the U. S. Government and leading manufacturers and automotive engineers prove Protectomotor the only air filter 99 9/10 efficient.

Protectomotor is the greatest money maker in motordom.

Write today for dealer's discounts, signs and advertising helps.

STAYNEW FILTER CORPORATION
ROCHESTER, N. Y.

A Motor without a Protectomotor is like a watch without a case

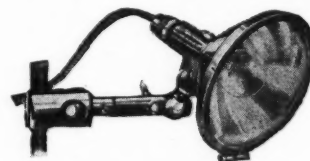
"A LAMP FOR EVERY AUTOMOTIVE NEED"



From the study of Light
come Victor Lamps

The Victor Line

THE name Victor on an automotive lighting device guarantees that it is scientifically correct, that it performs the function for which it is intended in a thoroughly satisfactory manner, that it is accurate in form and finish, that it is worthy of the name it bears. An eighty-year-old reputation which we jealously guard is the buyer's guide and guarantee, and the dealers assurance of a quality product distributed on an equitable basis.



VICTOR No. 100 SPOTLAMP

"Pathfinder" by name—an all brass, heavily nickeled, double shell, four-inch quality spotlight. Holds its place in the spotlight of public favor through sheer merit.

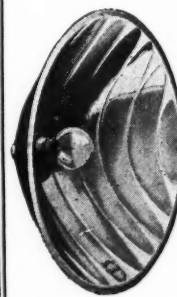
VICTOR No. 36
STOPLAMP

"Cardinal" is the name of this very popular combination stop and tail lamp. Fits all cars and adds to their beauty. A popular number in the Victor Line of Stoplamps.



VICTOR No. 47-G
PARKING LAMP

Appropriately called the "Gloworm." A little three-jeweled beauty. Extra jewel in side is green. Sells on sight and suggestion.



"The Bright Lights of Safety"

from these reflectors are making history in improved road lighting service. Fit all headlamps. Plain glass lenses come with them. A big seller everywhere. Victor

Headlamps to fit all cars are equipped with Victor Brown-Universal Reflectors and are the last word in headlamp construction and headlighting service.

Victor
BROWN-UNIVERSAL
REFLECTORS

"The LINE FOR EVERY AUTOMOTIVE DEALER"

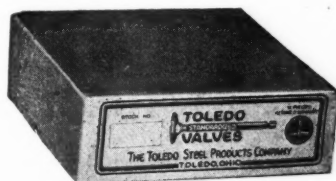
The CINCINNATI VICTOR CO.

716 Reading Road
CINCINNATI, OHIO



You make more money replacing valves than refacing them. And it costs your customers less. Toledo Valves are readily obtained in your market. They grind in easily. They give enduring satisfaction.

The Toledo Steel Products Co.
Toledo, Ohio



Among the millions and millions of Toledo Standardized Valves which have gone into original assemblies and replacements, there is no record of a head working loose.

Valves exclusively for over 11 years

TOLEDO VALVES

VALVES EXCLUSIVELY FOR OVER ELEVEN YEARS

Every Week

There are so many important articles, current news items, and interesting features in the fifty-two issues of Motor Age each year, that subscribers find it most profitable to read carefully through every issue when it comes.

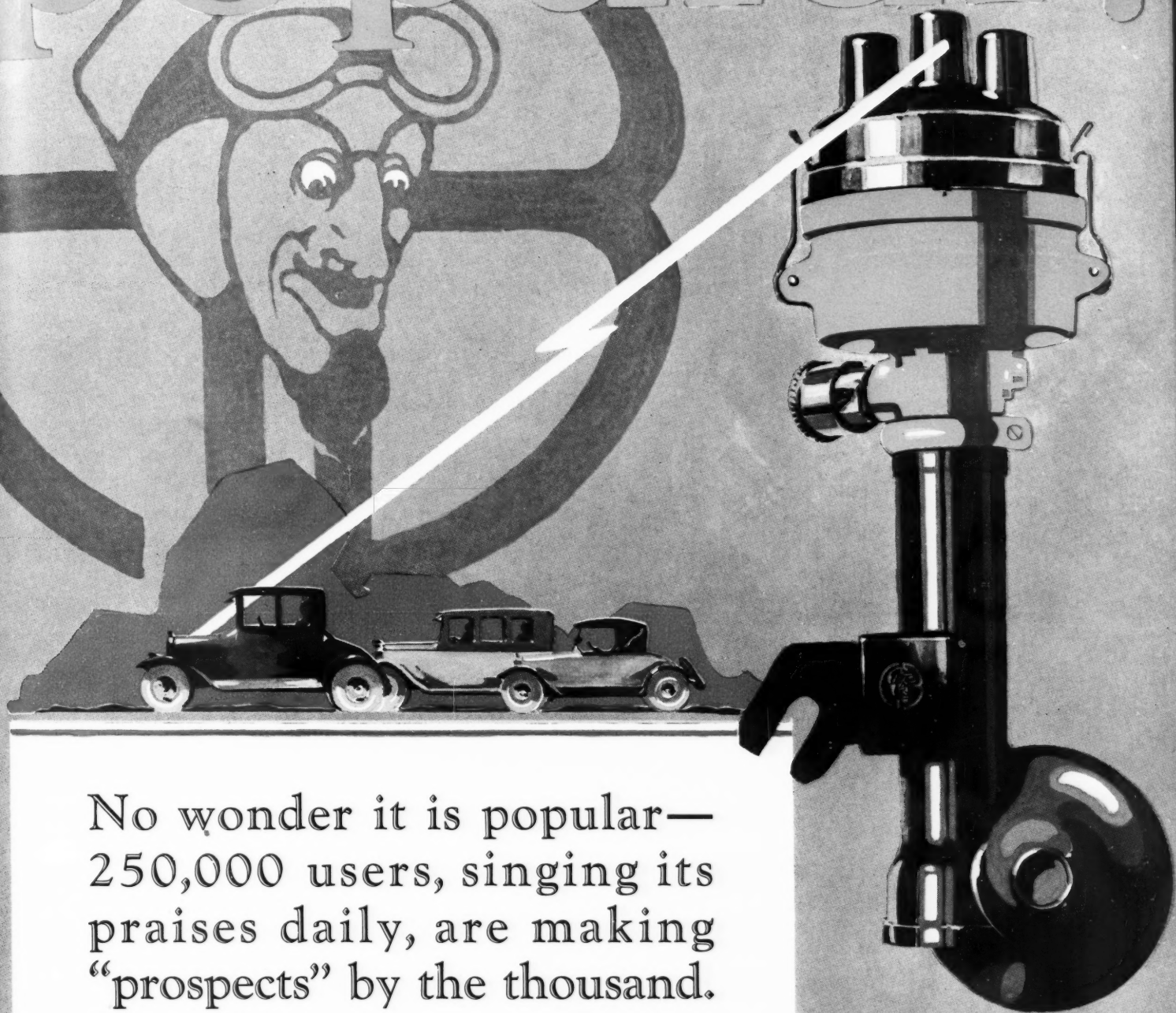
The timeliness of its contents is one of its most valuable assets.

Make it a point to look through Motor Age while its news is still fresh, and you will see why it is that its oldest friends and most loyal supporters read it regularly, every week.

MOTOR AGE

5 So. Wabash Ave., Chicago, Ill.

popular!



No wonder it is popular—
250,000 users, singing its
praises daily, are making
“prospects” by the thousand.
Live dealers can make big
profits closing these easy sales.
Specialize on Bosch Type 600
Ignition for Fords—It pays!

Price \$12.75 (\$17.50 in Canada)

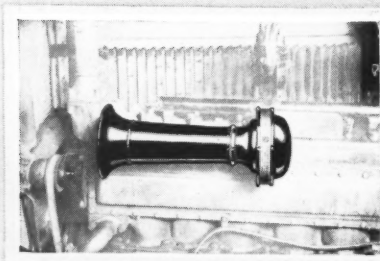
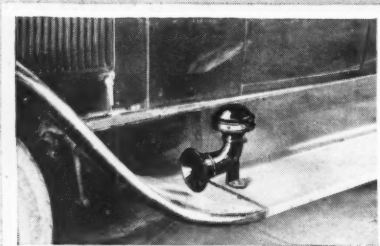
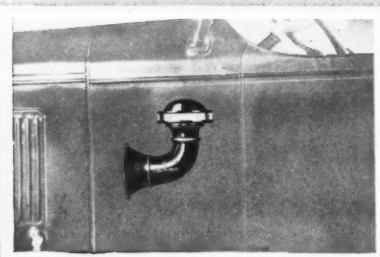
AMERICAN BOSCH MAGNETO CORP., Springfield, Mass.
Branches: New York, Chicago, Detroit, San Francisco

TYPE 600
BOSCH
Ignition
for
FORDS

WOW!



"-with a tone all its own"



A new horn for modern traffic conditions—its tone is clear, resonant, commanding, polite—dominating city traffic and penetrating far on country roads. Designed and built by Bosch — moderately priced.

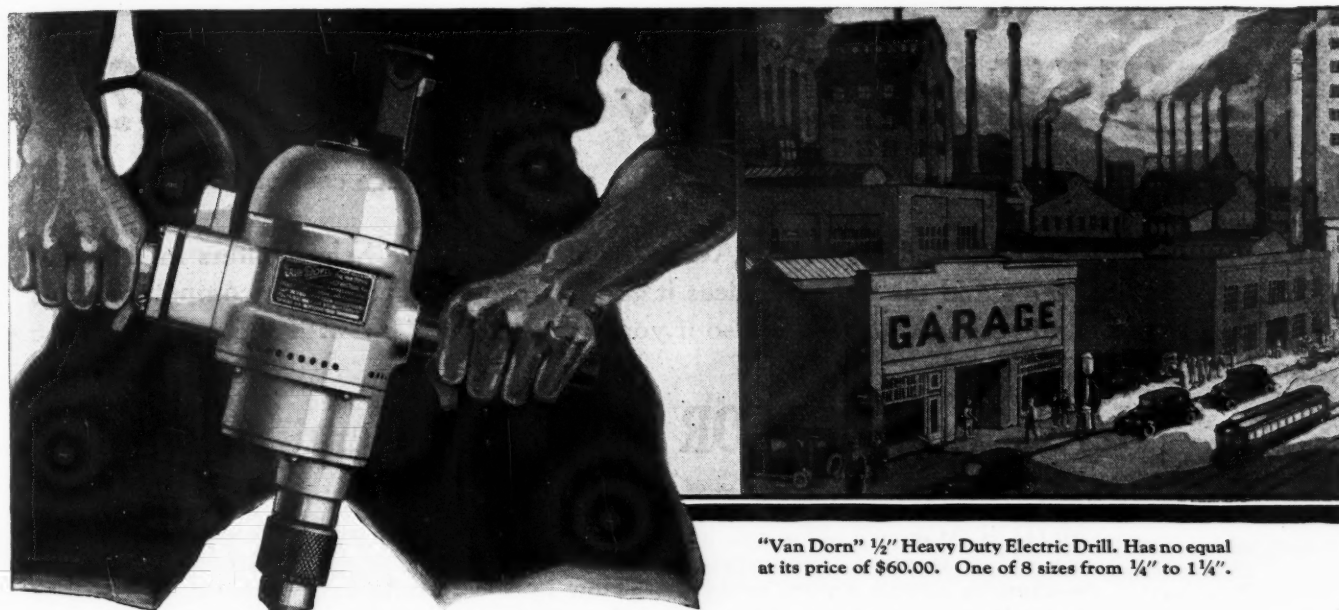
Straight Models \$19.80 Curved Models \$21.50

AMERICAN BOSCH MAGNETO CORP., Springfield, Mass.
Branches: New York Chicago Detroit San Francisco

BOSCH

Traffic Tuned

HORN



"Van Dorn" 1/2" Heavy Duty Electric Drill. Has no equal at its price of \$60.00. One of 8 sizes from 1/4" to 1 1/4".

When the Automotive Industry Calls the Roll

Automobile Service and Repair Shops that use "Van Dorn" electric drills find no gaps in the ranks. As every shop has certain men who are always on the job, so they have certain tools of the same caliber. Tools that are the "Old Standbys", that work all day, every day and take little time out for repairs.

"Van Dorn" drills have answered "present" every morning for twenty-five years in the best motor car, truck, body and accessory plants and are giving the same heavy duty and constant service in repair and maintenance shops.

Heavy duty work requires heavy duty drills. An underpowered drill fails in the pinches and stalls when most needed. "Van Dorn" drills are all overpowered in their particular size, because every motor is "Van Dorn" built and tested.

This power together with their perfect balance, ball bearings, hardened alloy steel gears, quick make and quick break switch all combine to give these drills the endurance that keeps them standard equipment in these and many more large plants.

Ask any "Van Dorn" jobber to prove this by actual test.

The Van Dorn Electric Tool Company

Makers of Portable Electric Drilling, Reaming and Grinding Machines, Etc.
Cleveland, Ohio

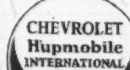
Sales and Service Branches

Atlanta	Philadelphia
Boston	Pittsburgh
Buffalo	Richmond
Chicago	St. Louis
Cincinnati	St. Paul
Detroit	Salt Lake City
Kansas City	San Francisco
Los Angeles	Seattle
New York	Toronto

"Van Dorn"
ELECTRIC
DRILLS

Large Users:

These well known automotive manufacturers are a few of the many business organizations who use "Van Dorn" drills as practically standard equipment. Many of them go still further and recommend these drills to their service stations.



Did You Enjoy This Copy?

You can get one like it every week for only \$3.00 a year—an average cost of a little less than six cents each.

Every man in the trade needs MOTOR AGE—needs the positive help it offers in the solution of daily problems and the valuable ideas it gathers for its readers. **Your competitor reads MOTOR AGE**, and you need to read it also if you want to keep up with the leaders of the automotive field.

Here's How MOTOR AGE Will Help You

Servicing

MOTOR AGE will show you how to make flat rates—How to sell Service—How to make customers permanent—How to organize a workshop—How to handle knotty problems—How to select Machinery—How to test electrical systems—How to make quick repairs—How to route shop work.

Selling

How other men do it—How to keep down overhead—How to advertise—How to make Salesmen produce—How to create a market—How to find prospects—How to make every sale pay—How to avoid losses—How to write letters that build business.

Hiring

How to get the right men—How to train them—How to pay them—How to get their co-operation—How to keep them enthusiastic.

Buying

How to select an accessory stock—How to judge merchandise—How to get a fast turnover—How to avoid dead items.

And then

Whatever else you need to know to make your business run smoothly MOTOR AGE will tell you if you only ask—All personal inquiries receive personal attention from our editors. Every subscriber is encouraged to come to us with his problems, whether mechanical, legal, architectural or financial. Try us, and we will give you "Service you will like."

The coupon is here for your convenience. If you are already a subscriber, pass it on to some friend in the trade who is not. When he starts getting MOTOR AGE, he'll appreciate the favor.

MOTOR AGE

5 South Wabash Ave.,
Chicago, Ill.

IMPORTANT MOTOR AGE is published exclusively for the trade. Subscriptions are accepted only from those actively engaged in our field—so please don't forget to include your business card or letter head with this order.

Gentlemen: Enclosed find \$3.00 to pay for a year's subscription to MOTOR AGE, including all special issues published during the life of my subscription.

Name.....

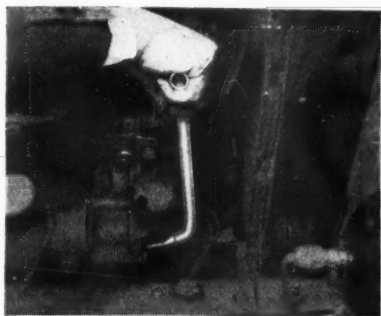
Street and No.....

City..... State.....

Firm Name.....

NOTE—If you are already subscribing to MOTOR AGE, please hand this coupon to a dealer who is not. He'll become a better competitor from reading MOTOR AGE.

For example —



Removing generator cap screw with ease and convenience, using No. 771 wrench



Removing carburetor flange bolt nut, using No. 771 wrench



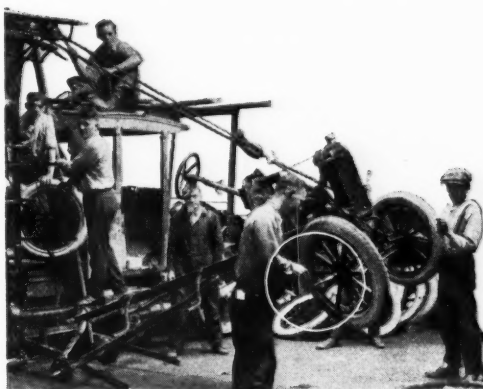
Removing cylinder head cap screws, using No. 3620 wrench. Opposite end is for Spark Plugs

Only three Walden-Worcester Socket Wrenches for servicing Ford Cars are illustrated in this "ad."

They serve, however, as examples of the wrenches we build to fit the job—to reach specific bolts and nuts.

There are other Walden-Worcester Socket Wrenches for Ford Cars, also designed to fit the location on the car and the space in which they are used.

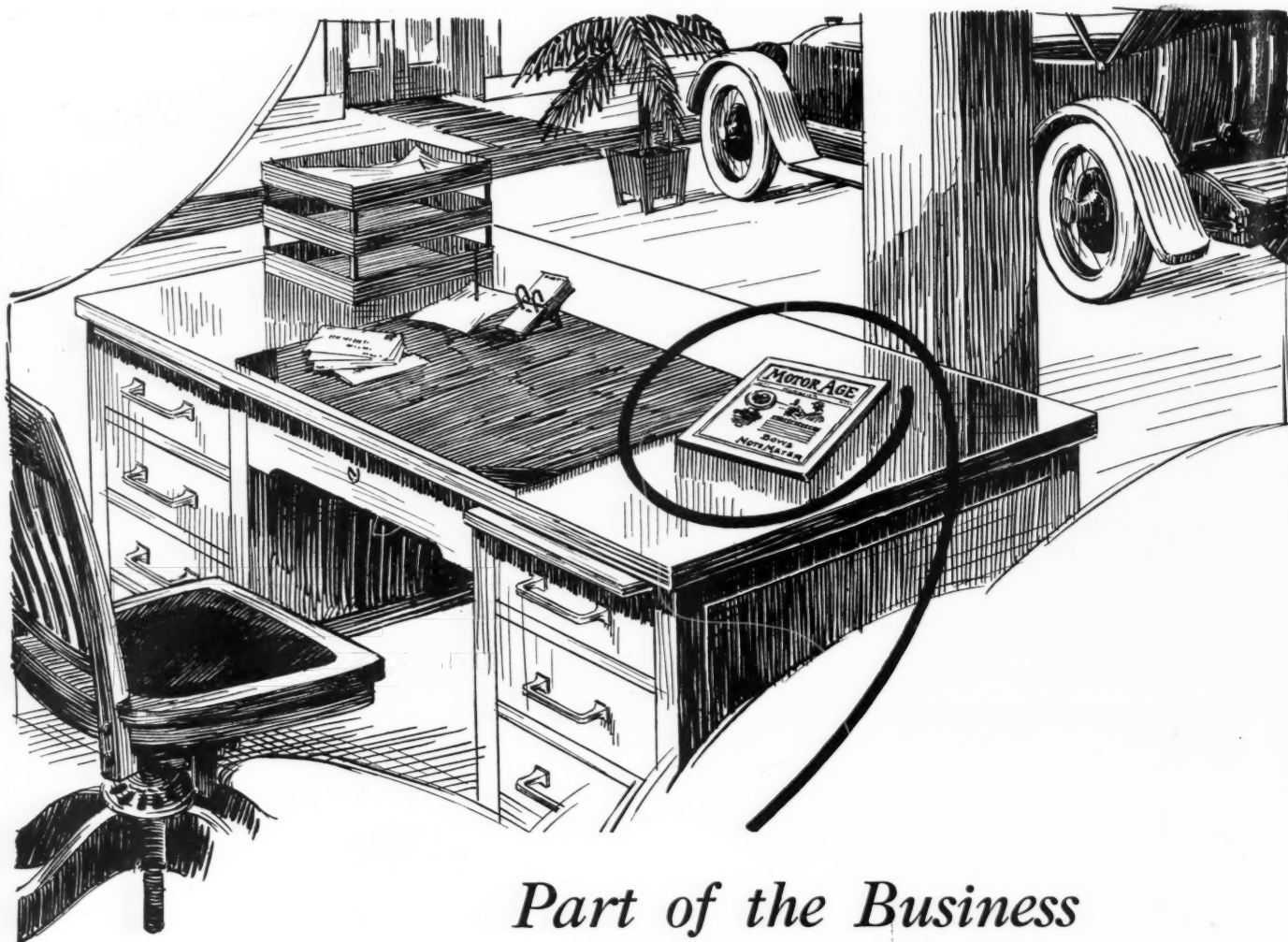
Ask your Jobber for information about these wrenches or write us for catalog No. 51B.



Using One Wrench (No. 1490) to assemble Ford cars

WALDEN-WORCESTER

The original, and largest exclusive manufacturers of All Steel, Socket Wrenches, ~ in the World
475 SHREWSBURY ST., WORCESTER, MASS., U. S. A.



Part of the Business of Making Profits

—is in knowing how others are making profits.

The editors of MOTOR AGE know these things. It is their privilege to visit successful dealer establishments, and to set down their findings in simple story form from week to week.

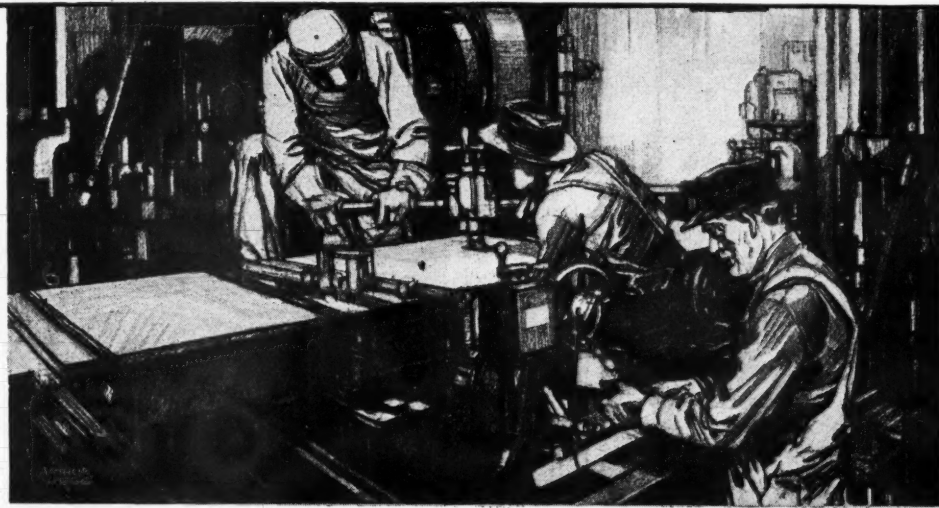
Those subscribers who read MOTOR AGE every week, are taking full advantage of this priceless information. Among their number are its staunchest supporters and its warmest friends.

At your right hand—on your desk—is the most valuable place to keep each current copy.

MOTOR AGE

5 So. Wabash Ave. Chicago, Ill.

THE STORY OF THE EMPIRE NEW PROCESS BOLT—Chapter 2. No. 1



—and the very place where strength is needed most

Stripped!

Of course. It was to be expected, for it's always been that way with cut thread bolts. You can depend on a certain percentage stripping as surely as you can depend on the coming of night.

What Cutting Does to Steel

If steel were a basic metal like gold or silver, you could cut into it without weakening it (except by the amount of metal removed).

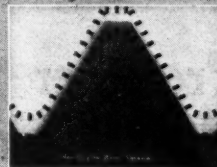
But steel is a granular composition, and when you dig into it with a cutting die, as in producing a bolt thread, you break down the molecular structure formed in the crucible and practically destroy its resistance to outside stresses.

The thread of an Empire *New Process* bolt is *built up* on a special blank, without cutting. The steel molecules, instead of being cut and

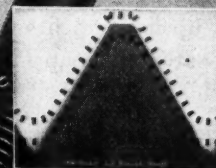
parted are forced into closer juxtaposition by the pressure of the dies; and the thread, instead of being the weakest, becomes the *strongest* part of the bolt! That is why Empire *New Process* bolts don't strip their threads.

Developed by World's Foremost Bolt Factory

But why aren't all other bolts made that way? Simply because the dies used, and the machine tools that produce them, are unknown in any other plant. It took many years' patient work, and the resources of the world's foremost bolt factory, to develop them. And they come logically from the same source as the first cold headed bolts and cold punched steel nuts. Would you like a few sample *New Process* bolts, to see how strong they are?



Comparator photograph, New Process bolt thread.



Comparator photograph, hardened and ground gauge thread.

RUSSELL, BURDSALL & WARD BOLT & NUT COMPANY PORT CHESTER, N.Y.

Branch Office:
Straus Building
CHICAGO

Branch
Factory:
ROCK FALLS, Ills.

Strimple & Gillette
160 Jackson Street
SEATTLE

Maydwell & Hartzell, Inc.
118-168 Eleventh Street
SAN FRANCISCO

Makers of Bolts, Nuts and Rivets Since 1875

EMPIRE

New Process BOLTS



"A Life Preserver for Every Motorist!"

That's what thousands of car-owners say of Basline Autowline. And it *is* like a life preserver—not thought about until needed, and then you simply can't get along without it.

No matter what happens—engine trouble, a skid into a ditch, or whatnot—Basline Autowline is *tow-home insurance!* You simply hail the first passing car—hitch on behind—and in a jiffy you're on your way. Get one this week.

Don't buy "just a towline." Insist on dependable Basline Autowline—the *original* wire rope towline. Made of world-famous Yellow Strand Wire Rope. Handy, light, coils up flat and fits under your seat cushion. Has patented Snap Hooks. Don't put off buying this real necessity—this "Little Steel Rope with the Big Pull."

Money for Jobbers and Dealers:

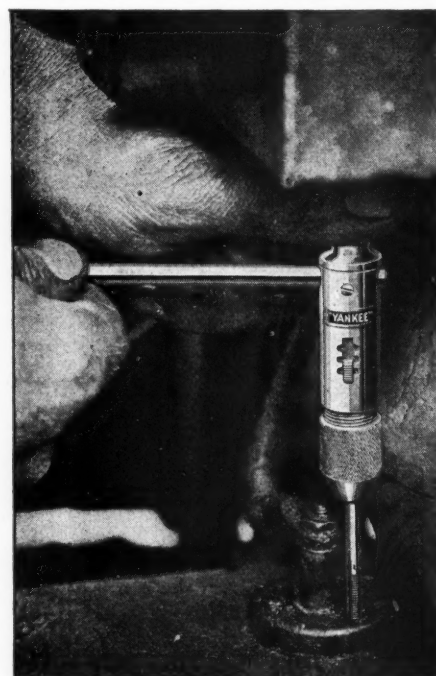
Basline Autowline pays you a good profit, and sells well. Push it this season. Write for New Price List.

BRODERICK & BASCOM ROPE CO.
ST. LOUIS—NEW YORK



GR 191

BASLINE AUTOWLINE



An awkward job made easy by the "YANKEE" Ratchet Tap Wrench

He had to tap a thread in the transmission case for a magneto plug screw.

Without a "Yankee" Tap Wrench he would have been compelled to remove the coil box.

But the "Yankee" Tap Wrench made this unnecessary. He just pulled the sliding cross bar out to end position, where his hand could move freely; set the Ratchet Shifter, and quickly tapped the hole.

Three adjustments. Right-hand Ratchet, Left-Hand Ratchet and Rigid. Knurled finger turn at top quickly starts or backs out taps.

No. 250—Length 3¼ in. Chuck diam., ¾ in. Holds up to 3/16 in. taps.

No. 251—Length 5 in. Chuck diam. 7/8 in. Holds up to 5/16 in. taps.

No. 1251—Length 13 in. For jobs needing long reach. Otherwise same as No. 251.

Some other "Yankee" Tools

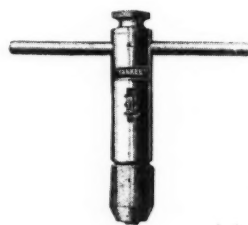
Spiral Screw-drivers
Ratchet Breast Drills
Quick-Return Spiral
Screw-drivers
Ratchet Bit Brace

Dealers Everywhere Sell
"Yankee" Tools

"Yankee" on the tool you buy means the utmost in quality, efficiency and durability

If you like tools you'll want this FREE "YANKEE" Tool Book

Shows every "Yankee" Tool, and tells you all about them. Write for your copy today.

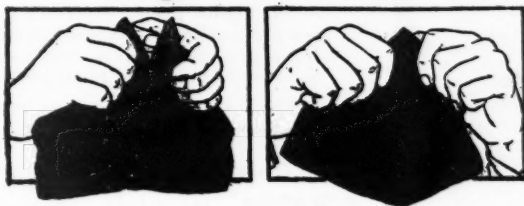


NORTH BROS. MFG. CO., Philadelphia, U. S. A.
"YANKEE" TOOLS
Make Better Mechanics

GATES BELTS

"The Standardized Fan Belt"

Try this test



Take a piece of light fabric that you can tear easily in this manner—that is, straight across. Then try to tear it diagonally as in the next picture.

You find that it has double strength on the bias—a good illustration of the extra strength and durability of the bias weave construction.

Such an easy thing to demonstrate—this double durability of the bias weave construction (patented). No wonder Gates Vulco Fan Belts outsell all other kinds.

Made by the World's Largest
Manufacturers of Fan Belts.



A Big Help in Car Maintenance

It is seldom that the automotive maintenance man finds a single product that will do as many things about the car as KEY Graphite Paste.

It can be used as gasket paste, to prevent corrosion and sulphation in battery terminals, to make leak-proof hose connections, on spark plug threads, on felt washers, for door squeaks, as manifold paint, on bolt threads, to prevent rust, as a spring lubricant, etc.

Easy to handle and keep on hand, in convenient sized can. TRY IT. We pay the postage on FREE SAMPLES.

KEY BOILER EQUIPMENT CO.

27TH AND McCASLAND AVE.
EAST ST. LOUIS, ILL.

—Sample—FREE—

Key Boiler Equipment Co.,
27th and McCasland Ave., East St. Louis, Ill.

Please send me without charge or obligation a sample of Key Graphite Paste.

Name.....

Firm.....

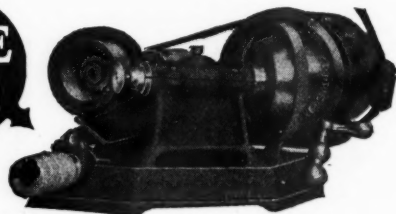
Address.....

Jobber's Name.....

M-A-7-2-25

Astonishing New Machine for Reclaiming Valves

**FREE
Trial**



Crowe ^{Cup} _{Wheel} Valve Refacer

New Principles! — New Results! — New Price!

This machine in your shop opens the way to larger profits—through saving of time and work and better and more accurate jobs.

It does everything that could be expected of a much higher priced machine, and usually does the work even better because of its many special features. At its low price, you cannot afford to grind the face of valves by hand any longer.

Just let us send you complete description of this wonder-working machine. Drop us a line now.

Price Only

\$85⁰⁰

Complete

This valve refacer not only costs you less than half the usual price of such a machine, but our special terms make it very easy to buy. Under our extended payment plan it practically pays its own way. Write today for our easy terms and FREE Trial Offer.

LISLE MANUFACTURING COMPANY
CLARINDA, IOWA

The Federal-Mogul Complete Line

Bronze Back Babbitt
Lined Bearings

Die Cast Babbitt
Bearings and Bushings

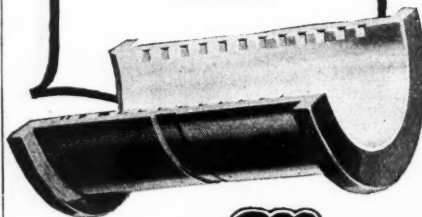
Bronze Bushings

Bronze Washers

Bronze Castings

Babbitt Metals

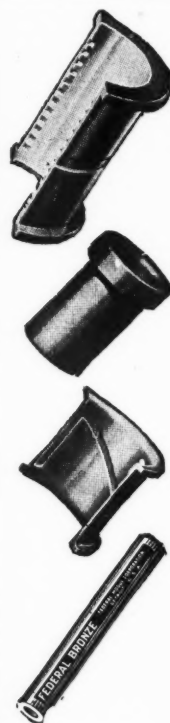
Bronze Cored and
Solid Bars



Federal-Mogul
FEDERAL

FEDERAL-MOGUL CORPORATION,
DETROIT, MICH.

A consolidation of the Muzzy-Lyon Co. and Federal Bearing & Bushing Corp.



Standard
equipment
with over
150
Automotive
Manufacturers

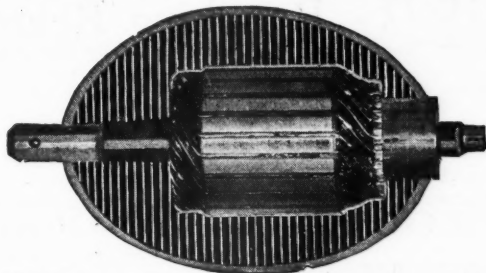


The Meeting Place of the Automotive Industry

WHENEVER men of the automotive industry come to Cleveland they can be found at The Hollenden.

An atmosphere of dignity found here forms a pleasant background for business and social engagements. In Cleveland—The Hollenden's reputation of eminence and desirability brings particular patrons.

Headquarters for the
Cleveland Automobile Club
THE HOLLENDEN HOTEL
Superior Avenue and East 6th Street
CLEVELAND, OHIO
Theo. DeWitt, Manager



"Mister, It's a Fredericks Job!"

Insulated and Guaranteed for 90 days—a year from now you won't remember there's an armature in your car. Then you'll be sold as solidly as I'm sold on Fredericks Rewinds." Get our interesting booklet and price list—sent gladly if you'll write for it.

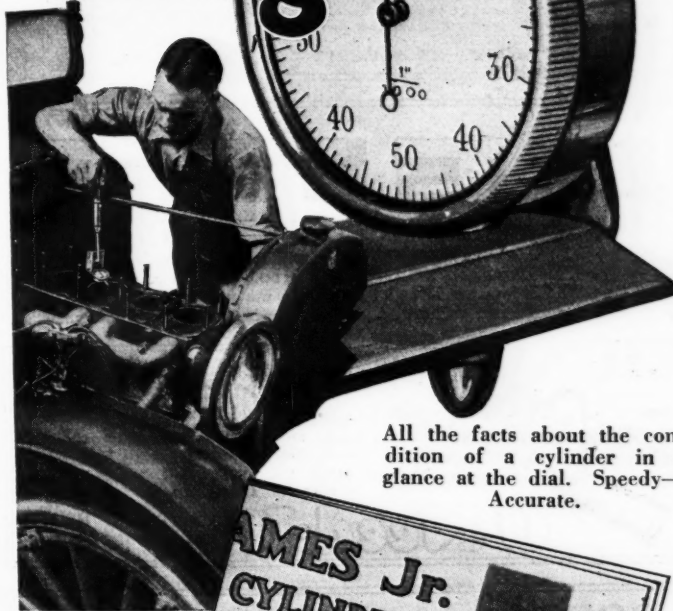
FORD Generator Armatures Rewound.....	\$1.50
FORD Starter Armatures Rewound.....	1.50
ALL OTHER TYPES TWO-UNIT Generator Armatures Rewound	3.25
ALL OTHER TYPES TWO-UNIT Starter Armatures Rewound	3.25
ALL TYPES MOTOR GENERATOR Armatures Rewound	8.00

GUARANTEED to give the same satisfaction as new armatures.

The H. M. FREDERICKS CO., Lock Haven, Pa.

FREDERICKS
Rewinding Service

AMES Cylinder Gauge



All the facts about the condition of a cylinder in a glance at the dial. Speedy—Accurate.

Send for complete information about this handy tool.

**AMES Jr.
CYLINDER
GAUGE**

Two Models

A **NEW** source of **PROFIT**

**And the
Crankshaft
Gauge**

A short cut to more profits.

B. C. AMES CO.,
Waltham, Mass.

Please send me two folders fully describing the CYLINDER GAUGE and the CRANKSHAFT GAUGE.

Name

Address

MA 7-2

MORRISON
Automatic Double Range
Worm Drive JACKS



Special model for Balloons

Can't Slip or Tilt

Flexible steel "Sure Hold" cap prevents dangerous slipping. Long folding handle (36 to 72 in.) operates from standing position. Gets under overhanging bodies. Easy to work. Few turns and it's up. Built in 11 sizes for all service requirements up to 8 tons. Furnished as standard equipment on fine passenger cars, trucks, buses and Fire Apparatus for past 4 years. The Jack for YOUR shop. Write for sample for test.

THE WOODS ENGINEERING CO., Alliance, Ohio

Cushers

CHICAGO ROLLER SKATE CO.
Manufacturers of Screw Machine and Automotive Products
Cushers Sales Dep't, Fulton-Dean Co.
332 South Michigan Avenue, Chicago

\$6.50 with belt



THE Pump—

with all the features that a pump for Fords should have. Highly efficient. Get our dealer plan.

The Turner Mfg. Co., 31st and Roanoke Rd.
Kansas City, Mo.

U-Need-It ROTARY PUMP for FORDS

PORE BLOWN BATTERY PLATES

They help you build better batteries because our special process gives them greater capacity—a strong, unfailing current over a longer period of time. The grids used in Pore-Blown Plates are reinforced at the bottom, where the strain is great. All materials used in the paste are pulverized—not just mixed. Send for our complete catalogue on plates and all battery parts.

General Storage Battery Co.
2005 Locust St. St. Louis

Jacobs Chucks

Look for a Jacobs Chuck on the Drill you buy—

The patented Tooth and Sleeved Key feature saves time, prevents slippage, reduces the breakage of drills and gives greater accuracy. Jacobs Chucks are the specified equipment of 132 makers of Drilling Machines and Portable Drills.

RAMCO
Cushion
INNER RINGS

fit behind piston rings and keep them in perfect contact with the cylinder walls at any motor speed or temperature.

RAMSEY ACCESSORIES MFG. CORP., ST. LOUIS, MO.



YOU CAN CLEAR \$150 to \$300 PROFIT EVERY MONTH with New HB 8 Hour Battery Charging Outfit. HB Users everywhere are adding \$150 to \$300 monthly to their income. Outfit comes complete with all necessary equipment for only \$35 cash. Small monthly payments. Free trial on moneyback guarantee. Write for free bulletin 250.

HOBART BROTHERS COMPANY
Box A 25 Troy, Ohio

8 HOUR BATTERY CHARGING PAYS BIG

FOLLETT'S NEW MODEL **TIME STAMP**

accounts for every labor minute



Prints the year, month, day, hour, minute, A. M. or P. M. at the exact moment the plunger is pressed—like this, for example:


NOV 19 1920 4 31 PM

Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic—except for winding. Every machine guaranteed.

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"Established Since 1904"

No Wonder They Sell Fast



Tasco Gasoline Gauge takes the place of the filler cap and saves the mean job of "measuring" the gas in the tank.

For Fords, Chevrolets and Overlands.

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\$1.25 RETAIL

UNITED STATES
Portable Electric
DRILLS



Built by the oldest maker of Portable Electric Drills in the World.

Ask for Catalog 105 THE UNITED STATES ELECTRICAL TOOL CO.
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—for hard and crystallized valve seats. Removes hard carbon coating with a few complete turns. Cuts clean and smooth—leaves no ridges.

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Repair Link for Broken Cross Chains



A Flower City Self-Closing Link attached with fingers to loose ends of broken chain closes and locks on first turn of wheel. Stops clanking—saves fender—low priced. Box of 10 Links retails for 25 cents. Write for samples and discounts. Distributors wanted.

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Rochester, N. Y.

A Complete Line of Overland Fours
A Complete Line of Overland Sixes
Willys-Knight Fours—Willys-Knight Sixes

ALL UNDER ONE FRANCHISE

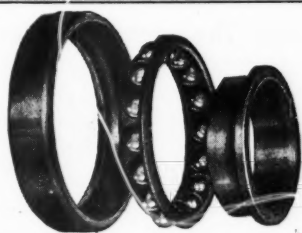
The Original Bosch



Franchise details for selling ORIGINAL BOSCH Automotive Equipment will be sent to any Distributor, Dealer or Service Station on request.

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ORIGINAL BOSCH units bear the full name, Robert Bosch, and the trade mark shown at left. These are the identifications of Bosch quality—famous since 1887.



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Lancaster, Penna.

Angular Contact Radial Bearings and Angular Contact Thrust Bearings. Manufacturers of Thrust Ball Bearings for all sizes and types of machines. Standard sizes of Thrust Ball Bearings and Special Thrust Ball Bearings.

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Cologne, Germany

Importers of
**American Motor Cars
and Accessories**

Telegraphic Address: Americauto



Can't CHATTER, Can't DIG IN
Smooth Round Holes Produced

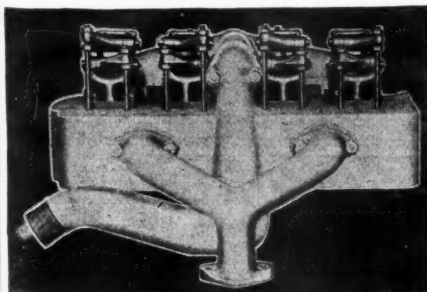
Each flute of the PAROB cuts at a different angle. This eliminates all chatter, all digging in. Twice the expansion of ordinary reamers. Screw-driver adjustment. No exposed locking devices. Can be re-ground and

honed as easily as a straight reamer. Extra length pilot with burr cutter. Made in all sizes. Multiple series types too. Also Gammons Taper Pin Reamers. They save two-thirds of the cost of reaming for taper pins. Descriptive price-list mailed to all.

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HAND REAMER**

THE GAMMONS-HOLMAN CO.
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**ROOF 16 OVERHEAD VALVE EQUIPMENT
For Ford and Dodge Motors**
ROOF 8 VALVE HEAD FOR FORD MOTOR

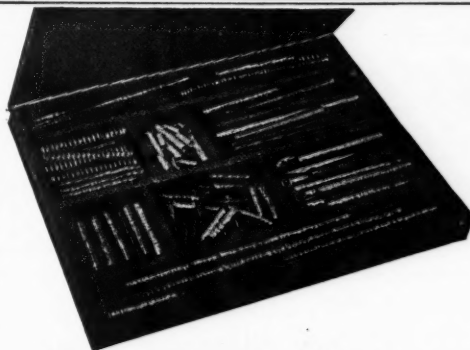


**Stupendous Power—
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Ford racing cars with Roof Equipment are rivals on mile and one half mile tracks of the highest priced racing cars. Doubles the pulling power of the Ford or Dodge pleasure car or truck. Hill climbing and general road work beyond wildest dreams of the owner. Complete—ready for installation—no machine work necessary. We are headquarters for all speed equipment. No matter what you want, write us. Racing quality—lowest prices. A postal card brings you complete list of our specialties.

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When You Need It!**

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arranged in compartments for quick, easy handling. If you get only 25c per spring, your profit on this PECK assortment will be \$59.00. A real money-maker for the Dealer and Garage. When ordering direct be sure and mention your Jobber's name.

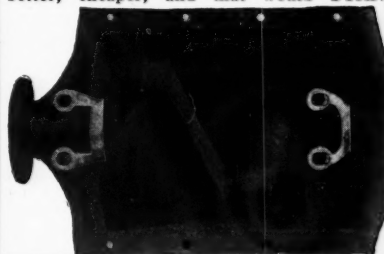
The Peck Spring Co., Plainville, Conn.

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Save Time and Money

Over 9,000,000 Fords to Service.

Garages and Service Stations, you have been looking for something to stop END PLAY, something that would be easy to install, quicker, better, cheaper, and that would STAND UP IN SERVICE. Use



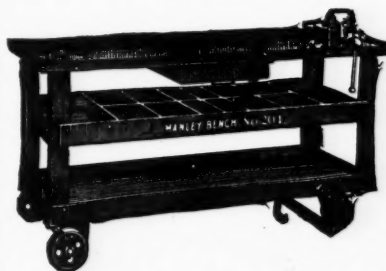
"OESTERN" END-PLAY SHIMS and you will be satisfied. Use a rear shim on every motor that comes out. CENTER BEARING SHIM adjustable to wear and installed WITHOUT REMOVING MOTOR.

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THE OESTERN CO.
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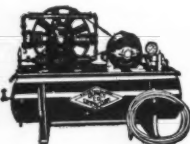
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Piston Rings**

American Hammered Piston Ring Company
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AUTOMOTIVE EQUIPMENT
Starting-Lighting-Braking
For Every Motor

Goodrich Cable is sold in lengths found to be the most popular with the average buyer—coils of 100 ft. packed in individual cartons. Both shop men and car owners like the clean 100 ft. package idea—and this leads to quick and profitable sales. Send for samples, prices and discounts.

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**Model G-16
Quincy Silent Air Master**

Manufactured by

Quincy Compressor Co.

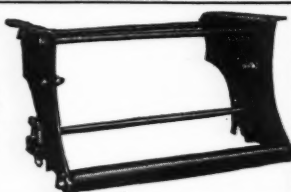
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Racks

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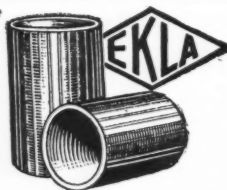
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Cleveland, O.

**MONOGRAM
ORIGINAL**
SELF LOCKING RADIATOR CAP

THE KINGSLEY-MILLER CO.

(General Automotive Corporation, Chicago)
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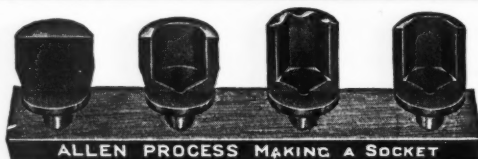
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—is tough and long-wearing—not easily damaged by heat, oil, vibration or radiator compounds. Sold in cut lengths for Fords and 3-foot lengths, all sizes with inch markings.

EKLA prices allow unusual profits to the trade.

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Drawn
Sockets



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Wrench
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It's a V shaped belt, constructed of tough fabric and a new special rubber compound. Sizes for all popular cars using V or grooved pulleys. Write for prices and complete information.



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Gilmer



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MOTORS**

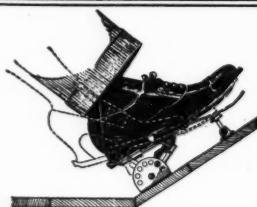


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Tapered
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Adjusts comfortably and easily to most convenient height for any driver's leg. Foot lies in normal restful, uncramped, safe position. Big, fast seller. Senior, \$3.50. Junior, \$1.25. Ask your jobber.

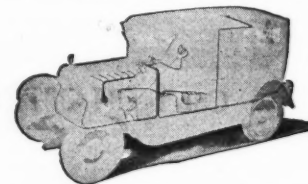
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Cable**

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Warren, Ohio



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This system has turned a job into an impressive, highly profitable business.

Write for full particulars

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—is the time to read next week's issue of MOTOR AGE, as you are reading this week's issue this week.

MOTOR AGE

5 So. Wabash Ave.

Chicago, Ill.

TAKE THE END-PLAY OUT!

—WITHOUT PULLING THE MOTOR



Pat'd 7-22-'22

THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magneto for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

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CARBURETOR

More
Power
Less
Fuel

Zenith - Detroit Corporation, Detroit, Mich.

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and Clutches



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Genuine
Apex Innerings

Most good
Jobbers stock them
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Innering
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BUSHING REMOVER

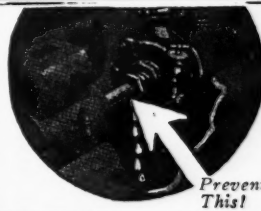
Any spindle bushing out in two minutes! Merely insert tool, drive out with hammer. Full set of 3 sizes covers all cars, \$4.50. Write for trade discount. Distributors wanted. E. T. Dieringer, Box 282, Bolivar, O.

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The Kissel Dealer
does not meet competition. He makes
others meet it.

KISSEL MOTOR CAR CO., Hartford, Wis.



**Stops Pump Shaft Leaks
Immediately and Permanently**

Conneaut Plastic Metallic Packing molds in fingers. Fits in stuffing box. Forms a practically frictionless bearing. "Take it up" like a bearing. In one and five pound cans. Remarkable results. Your jobber has it or write direct.

Conneaut Packing Co.,
Conneaut, Ohio



Curtis Pneumatic
Machinery Co.

1527 Kienlen Ave.
St. Louis, Mo.



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"You can't hold compression or stop oil pumping by putting round rings in an oval cylinder. The Hall is the only Hone guaranteed to make an oval hole round as well as parallel."

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INVENTORS—Manufacturer having sales organization covering every state and foreign countries desires marketable article on royalty basis. During past 5 years have paid to patent owners over \$100,000 in royalty on articles we have marketed. Address Box 6229, Motor Age, 5 S. Wabash Ave., Chicago, Ill.

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REPRESENTATIVES—An excellent opportunity awaits a dozen men who have proved their abilities to sell automotive specialties. They will have exclusive territorial rights to handle a new, long needed Ford accessory that has met with immediate success in territory already opened. If you can back your request for details with a story of performance, communicate with Moon Bros. Mfg. Co., 4904 McKissock St., St. Louis, Mo.

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NORTH EAST Model LGC Generators are

4-pole, 300 Watt machines and are built for 12 volt operation only. These units are designed especially for heavy duty bus service and are in use on Yellow Coaches, Fifth Avenue Buses, Mack Buses, and Safeway Six-Wheeler Coaches.

Model LGC Generators are controlled by 3rd brush split field regulation. This form of regulation maintains practically full rated output throughout the normal operating speed range. Arrangement is also made for voltage regulation which provides an ideal tapering charge and protects the battery against overcharging.

These Generators are grounded internally through one main brush holder, and the other main brush connection is brought out to terminal post No. 2. The field is brought out to the terminal post marked "shunt field." These markings should be carefully followed in making connections to voltage control unit.

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Genuine North East parts and official service are available at North East Service Stations everywhere.

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ROCHESTER, N. Y., U. S. A.

Manufacturers of Automotive Equipment for

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Graham Brothers	Yellow Cab
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USE ONLY *Genuine* SERVICE PARTS

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The Complete Line of Office Equipment

Allsteel Shelving

LIGHT, strong, fire-resistant—
quickly erected or re-erected
without special tools—and giving 10
to 30% greater storage space.

To fit growing needs, additional units may be
added later—or the entire installation moved
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Allsteel Shelving has innumerable uses in office,
store and factory, with low initial expense and
no upkeep. The Allsteel mark on shelving is
your guarantee of permanent satisfaction.

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Youngstown, Ohio

Dealers Everywhere • Canadian Plant: Toronto, Ontario



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MA.

The General Fireproofing Co., Youngstown, Ohio
Please send me without obligation a copy of your book, "Saving with
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State.....

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PHOSPHOR BRONZE

BUSHING BEARINGS

PATENTED

STAYING QUALITY

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Columbus 7528

CLEVELAND
710 St. Clair Ave., N. E.
Main 5991

CHICAGO
2015 S. Michigan Ave.
Calumet 6850-6851



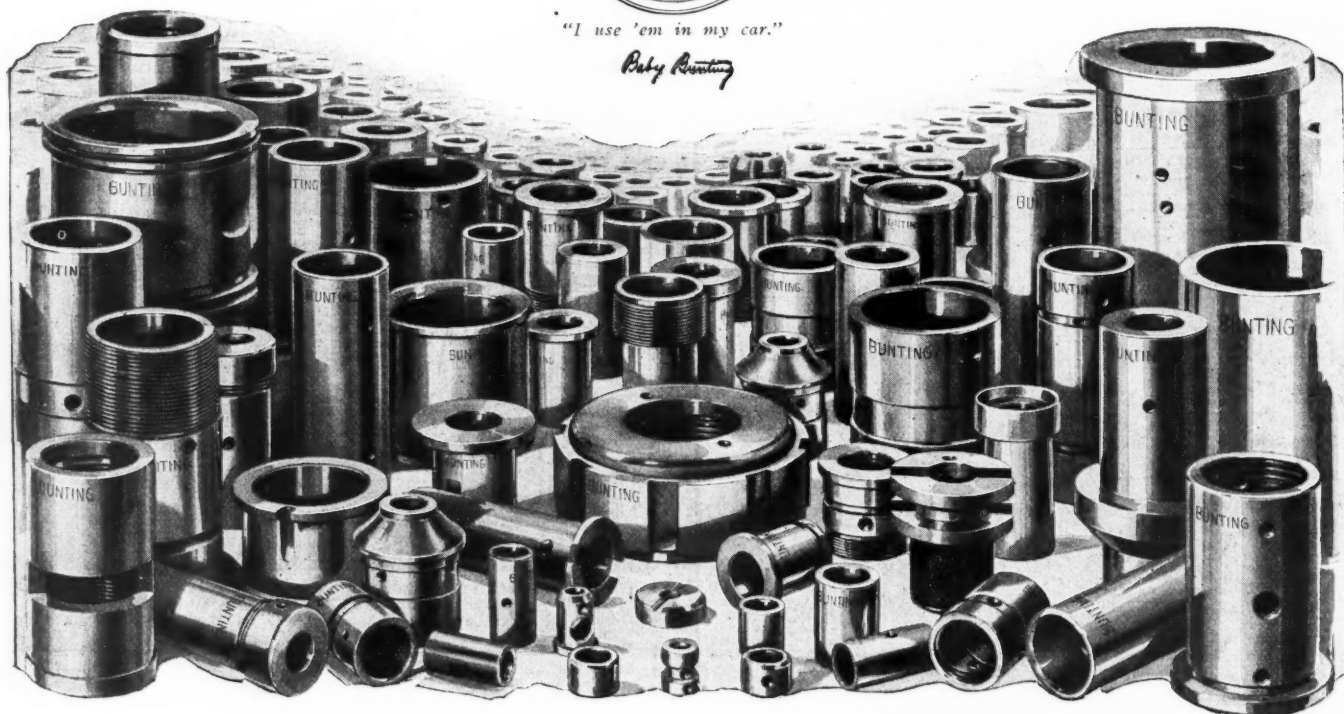
PHILADELPHIA
1330 Arch St.
Spruce 5296

San Francisco
198 Second St.
Douglas 6245

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36 Oliver St.
Main 8488

"I use 'em in my car."

Baby Bunting





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A spare to a side, and two up in livery, is style with which Disteel wheels go so well. Doubtless no other wheels have ever so nearly monopolized the most cherished wheel business. On the running boards, or on the rear, and on the road, Disteel wheels emphasize why Motor Wheel supplies wheels to more car manufacturers than does anybody else.

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